3PAR InForm Management Console 4.1.0 User's Guide

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Welcome

Welcome to the 3PAR InForm® Management Console Online Help!

The topics in this Help system contain information about managing 3PAR InServ® Storage Servers via the InForm Management Console.

The InForm Management Console enables secure configuration and monitoring capabilities while providing simultaneous access to multiple storage servers.

The InForm Management Console and the topics in this Help system are for use by system and storage administrators who monitor and direct system configurations and resource allocation for InServ storage systems.

3PAR technical documents can be found by logging into 3PAR Central's Document Control System from 3PAR's Support page, at http://support.3PAR.com.

Contact your local service provider for technical support and services at: http://www.3PAR.com/services.html.

About Units of Measure

All units of storage (capacity) are calculated base 2 (x 1,024).

- 1 KIB = 1,024 bytes
- 1 MiB = 2^{20} bytes = 1,024 bytes = 1,048,576 bytes
- 1 GiB = 2^{30} bytes = 1,024 MiB = 1,073,741,824 bytes
- 1 TiB = 2^{40} bytes = 1,024 GiB = 1,099,511,627,776 bytes

All units of performance (speed) are calculated base 10 (x1000).

- 1 KB = 1000 bytes
- 1 MB = 10^{6} bytes = 1000 KIB = 1,000,000 bytes
- 1 GB = 10^{9} bytes = 1000 MB = 1,000,000,000 bytes
- 1 TB = 10^{12} bytes = 1000 GB = 1,000,000,000,000 bytes

Related Documentation

In addition to the topics in this Help system, the following documents also provide information related to administering InServ Storage Servers:

For information about...	Read the...
Installing, starting, and using the InForm Command Line Interface (CLI)	*3PAR InForm OS CLI Administrator's Guide*
Using 3PAR Remote Copy software	*3PAR Remote Copy User's Guide*
Using the InForm Command Line Interface (CLI)	*3PAR InForm OS Command Line Interface Reference*
S-Class and T-Class Storage Server	*3PAR InServ S-Class/T-Class Storage*

hardware configurations, component numbering and layout, and system cabling	*Server Physical Planning Manual*
E-Class and F-Class Storage Server hardware configurations, component numbering and layout, and system cabling	*InServ E-Class/F-Class Storage Server and Third-Party Rack Physical Planning Manual*
Identifying storage server components and fixing problems	*InForm OS Messages and Operator's Guide*

Working with the Interface

This topic outlines how to use the InForm Management Console and provides an overview of the major tasks you can perform.

The InForm Management Console interface contains a menu bar, toolbar, management tree, common actions panel, manager pane, management window, alert/task/connection pane, and status bar. See Components of the Interface for further information.

When starting the InForm Management Console and logging into an InServ Storage Server, or multiple storage servers, the interface appears displaying the **Systems** overview screen, as well as the management tree and alert pane. The status bar is located at the bottom of the interface.

Topics discussed here include:

Components of the Interface

About Introduction Tabs

Selecting Multiple Items

Refreshing the InForm Management Console

Exporting Data

Filtering

Setting Preferences

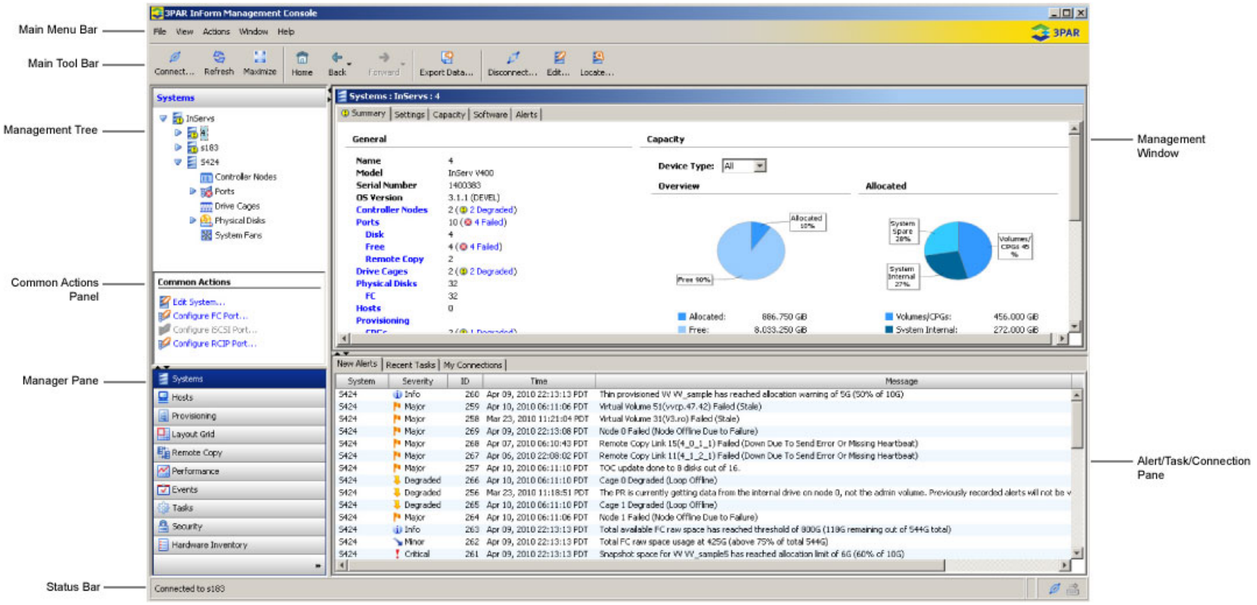
Understanding Icons

Using Help

Components of the Interface

The InForm Management Console is made up of the following components:

- Main Menu Bar
- Main Toolbar
- Management Tree
- Common Actions Panel
- Manager Pane
- Management Window
- Alert/Task/Connection Pane
- Status Bar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Main Tool Bar
Management Tree
Common Actions Panel
Manager Pane
Status Bar
Management Window
Alert/Task/Connection Pane
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Configure FC Port...
Configure iSCSI Port...
Configure RCIP Port...
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Hosts
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Layout Grid
Remote Copy
Performance
Events
Tasks
Security
Hardware Inventory
Systems : InServs : 4
Summary
Settings
Capacity
Software
Alerts
General
Capacity
Overview
Allocated
Allocated 10%
Free 90%
System Spare 28%
Volumes/CPGs 45 %
System Internal 27%
New Alerts
Recent Tasks
My Connections

Name 4
Model InServ V400
Serial Number 1400383
OS Version 3.1.1 (DEVEL)
Controller Nodes 2 (2 Degraded)
Ports 10 (4 Failed)
Disk 4
Free 4 (4 Failed)
Remote Copy 2
Drive Cages 2 (2 Degraded)
Physical Disks 32
FC 32
Hosts 0
Provisioning

Device Type: All

Allocated: 886.750 GB
Free: 8,033.250 GB
Volumes/CPGs: 456.000 GB
System Internal: 272.000 GB

System	Severity	ID	Time	Message
S424	Info	260	Apr 09, 2010 22:13:13 PDT	Thin provisioned VV VV_sample has reached allocation warning of 5G (50% of 10G)
S424	Major	259	Apr 10, 2010 06:11:06 PDT	Virtual Volume 51(vvcp.47.42) Failed (Stale)
S424	Major	258	Mar 23, 2010 11:21:04 PDT	Virtual Volume 31(V3.ro) Failed (Stale)
S424	Major	269	Apr 09, 2010 22:13:08 PDT	Node 0 Failed (Node Offline Due to Failure)
S424	Major	268	Apr 07, 2010 06:10:43 PDT	Remote Copy Link 15(4_0_1_1) Failed (Down Due To Send Error Or Missing Heartbeat)
S424	Major	267	Apr 06, 2010 22:08:02 PDT	Remote Copy Link 11(4_1_2_1) Failed (Down Due To Send Error Or Missing Heartbeat)
S424	Major	257	Apr 10, 2010 06:11:10 PDT	TOC update done to 8 disks out of 16.
S424	Degraded	266	Apr 10, 2010 06:11:10 PDT	Cage 0 Degraded (Loop Offline)
S424	Degraded	256	Mar 23, 2010 11:18:51 PDT	The PR is currently getting data from the internal drive on node 0, not the admin volume. Previously recorded alerts will not be v
S424	Degraded	265	Apr 10, 2010 06:11:10 PDT	Cage 1 Degraded (Loop Offline)
S424	Major	264	Apr 10, 2010 06:11:06 PDT	Node 1 Failed (Node Offline Due to Failure)
S424	Info	263	Apr 09, 2010 22:13:13 PDT	Total available FC raw space has reached threshold of 800G (118G remaining out of 544G total)
S424	Minor	262	Apr 09, 2010 22:13:13 PDT	Total FC raw space usage at 425G (above 75% of total 544G)
S424	Critical	261	Apr 09, 2010 22:13:13 PDT	Snapshot space for VV VV_sample5 has reached allocation limit of 6G (60% of 10G)

Connected to s183

Main Menu Bar

The following items are available from the Main Menu Bar:

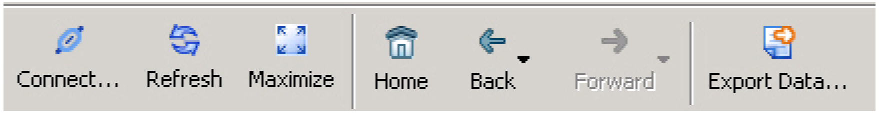
Menu	Command	Description
File	**Connect**	Displays the **Connect** dialog box, allowing you to connect additional storage server(s).
	Disconnect	Displays the **Disconnect** dialog box, allowing you to disconnect from storage server(s).
	Exit	Closes all windows and exits the InForm GUI.
View	**Refresh**	Refreshes the InForm Management Console.
	Auto-Refresh	Automatically refreshes the InForm Management Console. By default, **Auto-Refresh** is selected.
	Maximize	Expands the Application Window so it consumes the entire InForm Management Console window.
	Export Data	Displays the **Export Data** window, allowing you to save table data as CSV or HTML format.
	Grid	Displays a submenu for setting the **Zoom**, <**Set|Clear**> **Grid Sticky**, <**Show|Hide**> **Details Table**.
	Preferences	Opens the **Preferences** window, allowing you to define **Data Format** and **Look and Feel** options for determining how data is displayed. See Setting Preferences.

Actions	**Systems**	Displays a submenu providing access to system level options.
	Hosts	Displays a submenu providing access to host creation, edit, and removal functions.
	Provisioning	Displays a submenu providing access to all aspects for provisioning storage, including VVs, VLUNs, CPGs, LDs, and Templates.
	Remote Copy	Displays a submenu providing access to set up and edit Remote Copy configurations.
	Alert	Displays a submenu for working with the selected alert. See Managing Events and Alerts.
	Performance	Displays a submenu providing options to performance charting, including new, open, save, and edit functions.
	Task	Displays a submenu allowing you to cancel and remove tasks.
	Security	Displays a submenu providing access for working with users and domains.
Window	**Cascade**	Arranges Application Windows so they overlap one another, but every window is visible within the desktop.
	Tile	Arranges and resizes all Application Windows to fit inside the desktop.
	Tile Horizontally	Tiles all Application Windows horizontally in the desktop.
	Tile Vertically	Tiles all Application Windows vertically in the desktop.

	Close All	Closes all open Application Windows.
	Restore	Restores the selected Application Window from the TasKiBar to the desktop.
	Minimize	Minimizes the selected Application Window.
	Maximize	Maximizes the selected Application Window.
	1...<List of Open Windows>	Restores the selected Application from the TasKiBar to the Desktop.
Help	**Topics**	Opens the **Help Navigator** and the **Help Topic Window**, providing access to the InForm Management Console Online Help system.
	About 3PAR InForm Management Console	Displays the **About 3PAR InForm Management Console** dialog box, which contains version number, software patch, and copyright information.

Main Toolbar

The Main Toolbar is displayed as follows:



The following default items are available from the Main Toolbar:

Command	Description
Connect	Displays the **Connect** dialog box, allowing you to connect additional storage server(s).
Refresh	Refreshes the InForm Management Console.
Maximize	Expands the Management Window so it consumes the entire InForm Management Console window.
Restore	Restores the Management Window to its original size.
Home	Returns all panes, the Management Tree, and Management Window to the default view (**Systems Introduction**).
Back/Forward	Returns backward or forward to the previously selected Manager Pane, Management Tree item, and Management Window display.
Export	Displays the **Export Data** window, allowing you to save table data as CSV or HTML format.

Additional actions are displayed on the Main Toolbar depending on the selected manager, node selected from the Management Tree, and item selected from the Management Window.

See also:

- Management Tree
- Manager Pane
- Management Window
- Working with the Systems Manager
- Working with the Hosts Manager

- Working with the Provisioning Manager
- Working with the Layout Grid Manager
- Working with the Remote Copy Manager
- Working with the Performance Manager
- Working with the Events Manager
- Working with the Tasks Manager
- Working with the Security Manager
- Working with the Hardware Inventory Manager

Management Tree

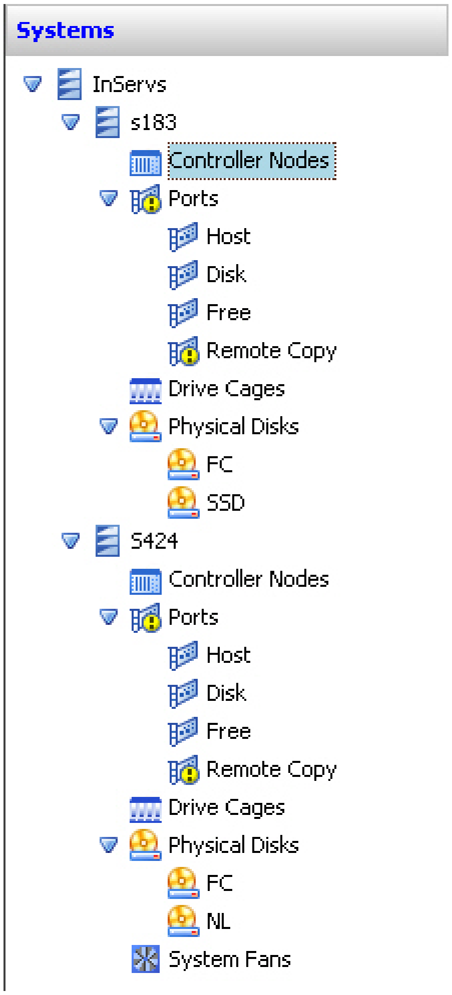
The Management Tree displays information relevant to the selected manager from the Manager Pane. At its most basic, the Management Tree displays which storage servers are connected to the InForm Management Console. Additional icons displayed on the Management Tree are specific to the manager selected. For example, in the figure below the Management Tree displays icons specific to the **Systems** manager. The Management Tree also has shortcut menus that contain useful commands.

Management Tree Structure

When you click an icon on the Management Tree, the associated data is displayed in the Management Window. For example, if you click the **Ports** icon, information about a system's ports is displayed.

Each icon displayed with an expandable triangle (▶) to its left is called a node. An expandable triangle also indicates that that node can be expanded to display additional information. The Management Tree nodes are displayed in a parent/child relationship. For example, in the figure below the connected storage servers (**s183** and **S424**) are displayed as child nodes of the **InServs** parent node. **Ports** and **Physical Disks** are further displayed as child nodes of the connected servers.

Also included for quick visual reference, **Normal** 🟢, **Degraded** ⚠, or **Failed** ⊗ status icons are displayed in the tree to quickly identify systems or related system components that may require attention.

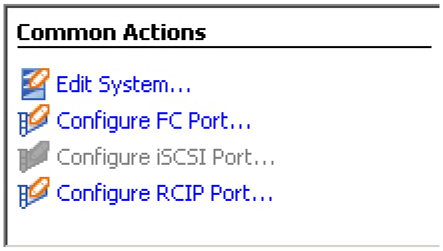

Systems
InServs
s183
Controller Nodes
Ports
Host
Disk
Free
Remote Copy
Drive Cages
Physical Disks
FC
SSD
S424
Controller Nodes
Ports
Host
Disk
Free
Remote Copy
Drive Cages
Physical Disks
FC
NL
System Fans

See also:

- Manager Pane
- System and Component Status Icons

Common Actions Panel

The Common Actions Panel provides quick access to functions commonly performed with each manager in the Manager Pane. Clicking an action listed in the Common Action Panel launches that action's wizard. As with the Management Tree, the functions provided in the Common Actions Panel are specific to the selected manager from the Management Pane. Unavailable functions are displayed in grey. For example, in the figure below the actions displayed in the Common Actions panel are specific to the Systems manager selected in the Manager Pane.

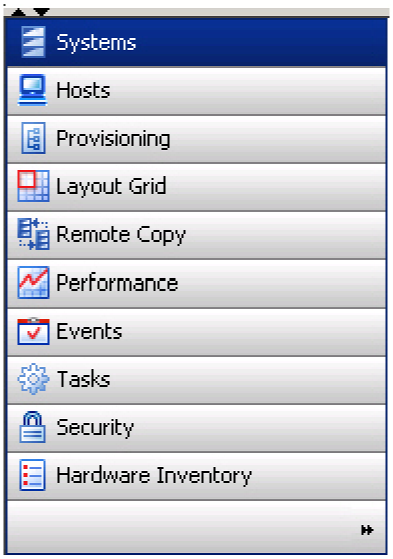

Common Actions
Edit System...
Configure FC Port...
Configure iSCSI Port...
Configure RCIP Port...

See also:

[Manager Pane](#)

Manager Pane

Managers are groups of displays and actions, which are specific to different InServ Storage Server areas of management. The selected manager affects the Management Tree display, data displayed in the Management Window, and, if applicable, the actions in the Common Actions Panel.


Systems
Hosts
Provisioning
Layout Grid
Remote Copy
Performance
Events
Tasks
Security
Hardware Inventory

The following managers are contained in the Manager Pane:

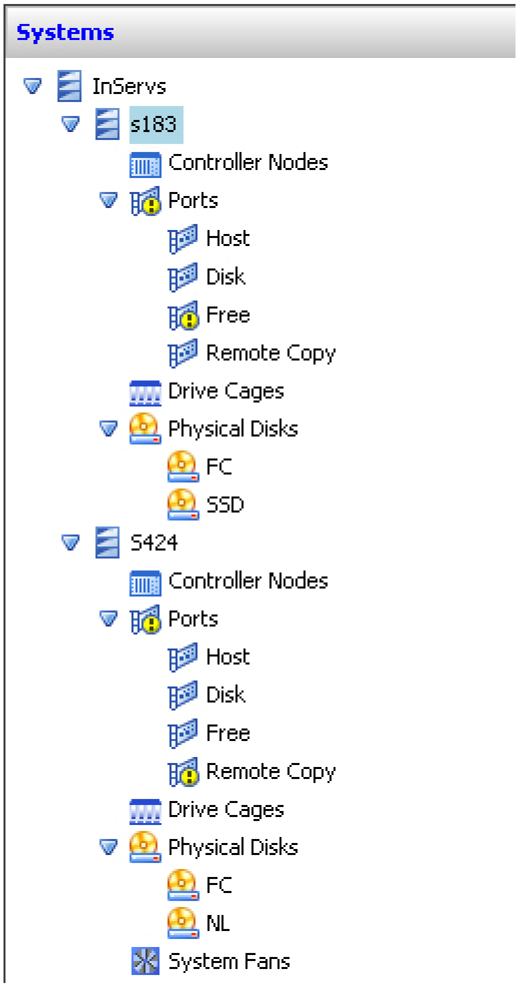
- System Manager
- Host Manager
- Provisioning Manager
- Layout Grid Manager
- Remote Copy Manager
- Performance Manager
- Event Manager
- Task Manager

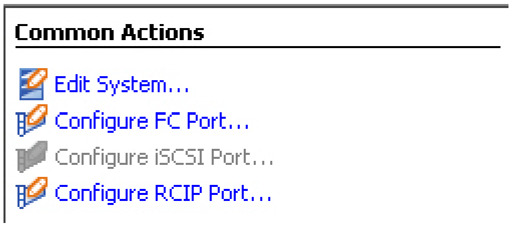
- Security Manager
- Hardware Inventory Manager

For instructions on modifying the display of the Manager Pane, see Setting Manager Pane Preferences and Customizing the Manager Pane Display.

System Manager

The **System Manager** allows you to view and perform system-level actions and information. When the **System Manager** is selected, the Management Tree and Common Actions Panel appear as follows:


Systems
InServs
s183
Controller Nodes
Ports
Host
Disk
Free
Remote Copy
Drive Cages
Physical Disks
FC
SSD
S424
Controller Nodes
Ports
Host
Disk
Free
Remote Copy
Drive Cages
Physical Disks
FC
NL
System Fans

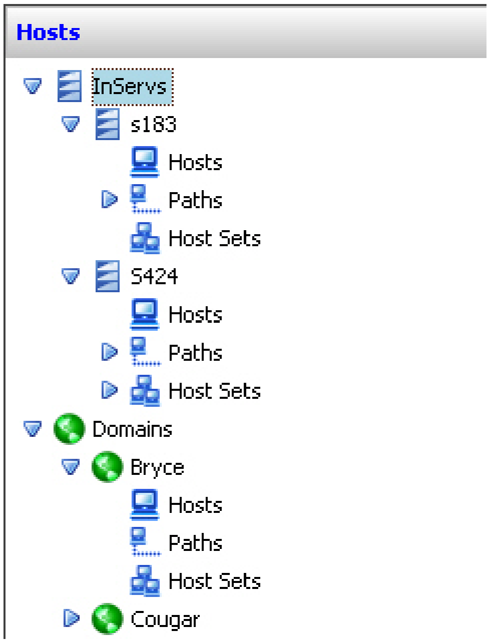

Common Actions
Edit System...
Configure FC Port...
Configure iSCSI Port...
Configure RCIP Port...

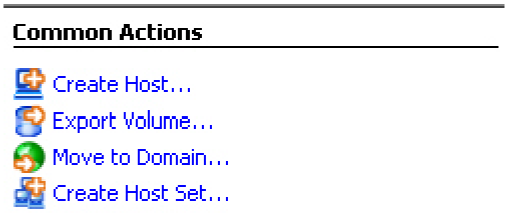
See also:

- Working with the System Manager

Host Manager

The **Host Manager** allows you to view and perform host-specific actions and information. When the **Host Manager** is selected, the Management Tree and Common Actions Panel appear as follows:


Hosts
InServs
s183
Hosts
Paths
Host Sets
S424
Hosts
Paths
Host Sets
Domains
Bryce
Hosts
Paths
Host Sets
Cougar

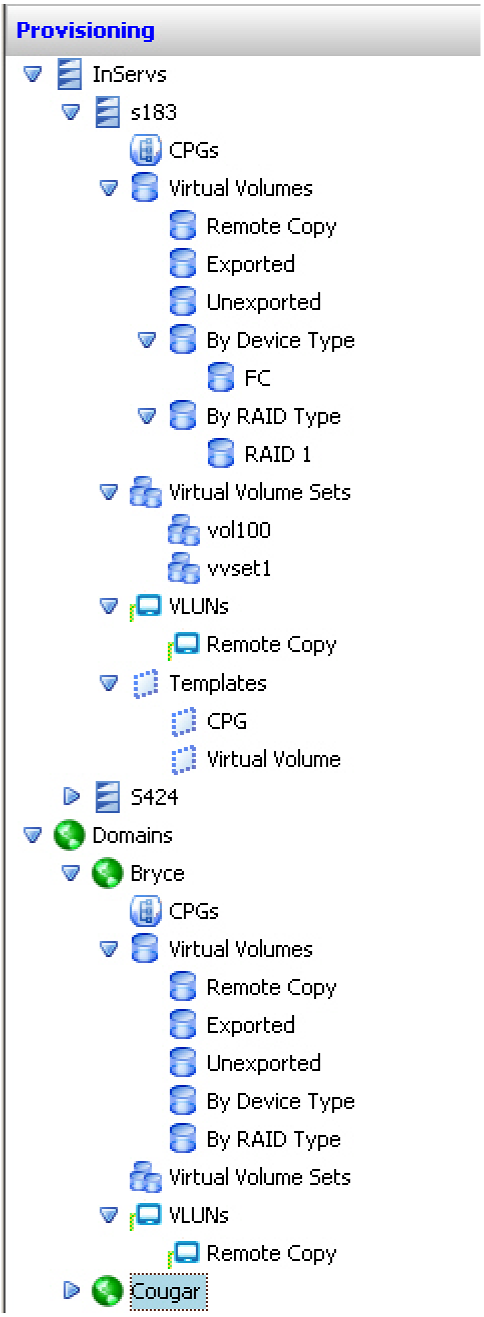

Common Actions
Create Host...
Export Volume...
Move to Domain...
Create Host Set...

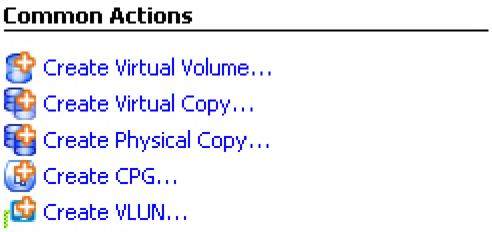
See also:

[Working with the Host Manager]()

Provisioning Manager

The **Provisioning Manager** allows you to view and perform system provisioning actions and information. When the **Provisioning Manager** is selected, the Management Tree and Common Actions Panel appear as follows:


Provisioning
InServs
s183
CPGs
Virtual Volumes
Remote Copy
Exported
Unexported
By Device Type
FC
By RAID Type
RAID 1
Virtual Volume Sets
vol100
vvset1
VLUNs
Remote Copy
Templates
CPG
Virtual Volume
S424
Domains
Bryce
CPGs
Virtual Volumes
Remote Copy
Exported
Unexported
By Device Type
By RAID Type
Virtual Volume Sets
VLUNs
Remote Copy
Cougar

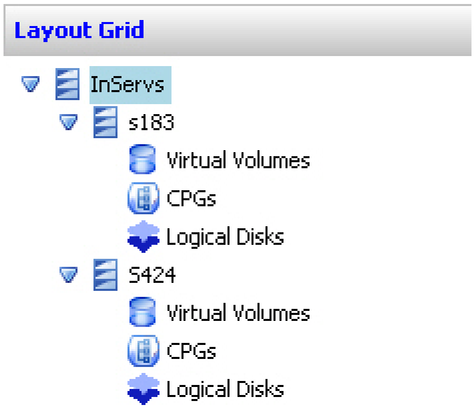

Common Actions
Create Virtual Volume...
Create Virtual Copy...
Create Physical Copy...
Create CPG...
Create VLUN...

See also:

Working with the Provisioning Manager

Layout Grid Manager

The **Layout Grid Manager** allows you to view the layout of virtual volumes, Common Provisioning Groups (CPGs), and logical disks of InServ Storage Servers. When the **Layout Grid Manager** is selected, the Management Tree appears as follows:



Layout Grid

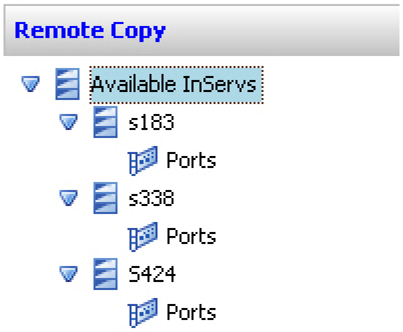
- InServs
  - s183
    - Virtual Volumes
    - CPGs
    - Logical Disks
  - S424
    - Virtual Volumes
    - CPGs
    - Logical Disks

See also:

Working with the Layout Grid Manager

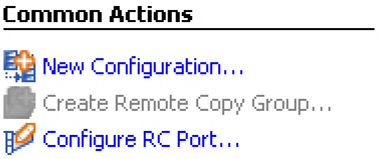
Remote Copy Manager

The **Remote Copy Manager** allows you to view and perform Remote Copy actions and information. When the **Remote Copy Manager** is selected, the Management Tree and Common Actions Panel appear as follows:



Remote Copy

- Available InServs
  - s183
    - Ports
  - s338
    - Ports
  - S424
    - Ports



Common Actions

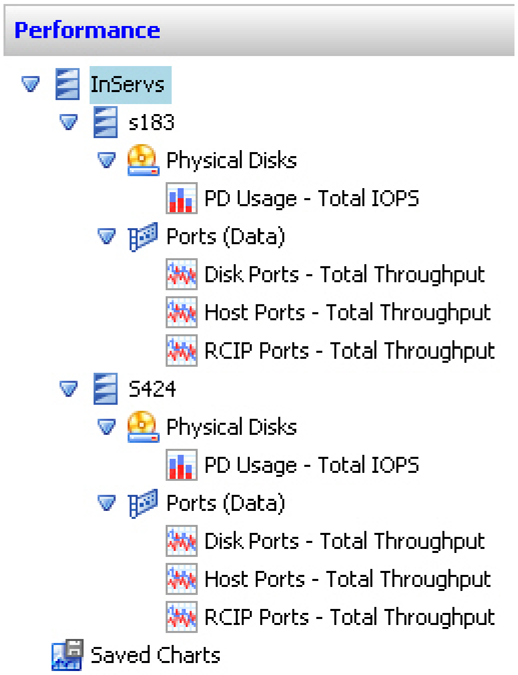
- New Configuration...
- Create Remote Copy Group...
- Configure RC Port...

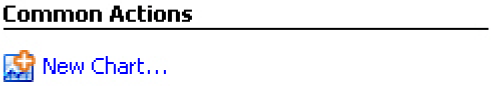
See also:

Working with the Remote Copy Manager

Performance Manager

The **Performance Manager** allows you to view system performance information and work with performance charts. When the **Performance Manager** is selected, the Management Tree and Common Actions Panel appear as follows:


Performance
InServs
s183
Physical Disks
PD Usage - Total IOPS
Ports (Data)
Disk Ports - Total Throughput
Host Ports - Total Throughput
RCIP Ports - Total Throughput
S424
Physical Disks
PD Usage - Total IOPS
Ports (Data)
Disk Ports - Total Throughput
Host Ports - Total Throughput
RCIP Ports - Total Throughput
Saved Charts

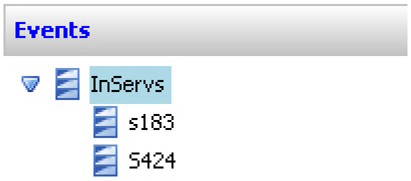

Common Actions
New Chart...

See also:

[Working with the Performance Manager]

Event Manager

The **Event Manager** allows you to view InServ Storage Servers alerts and events. When the **Event Manager** is selected, the Management Tree appears as follows:

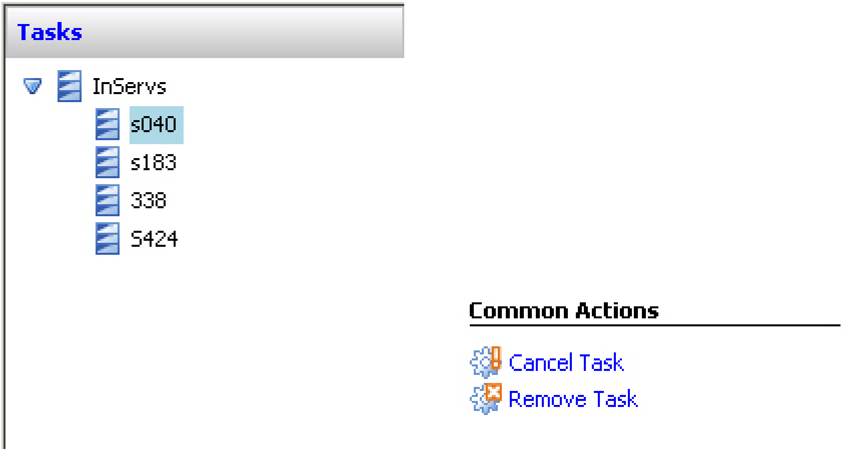

Events
InServs
s183
S424

See also:

Working with the Events Manager

Task Manager

The **Task Manager** allows you to view and perform system task actions and information. When the **Task Manager** is selected, the Management Tree and Common Actions Panel appear as follows:

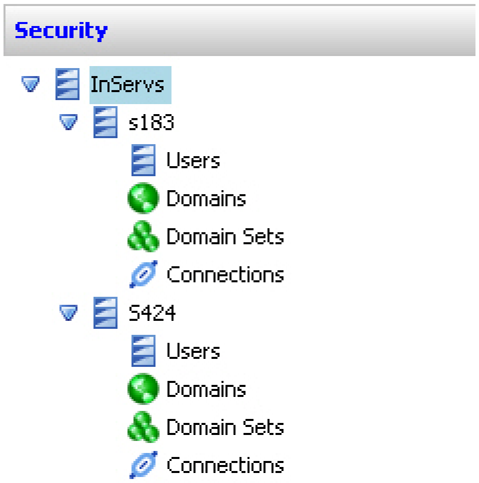

Tasks
InServs
s040
s183
338
S424
Common Actions
Cancel Task
Remove Task

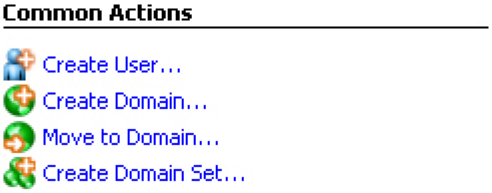
See also:

Working with the Tasks Manager

Security Manager

The **Security Manager** allows you to view and work with system users, domains, and connections. When the **Security Manager** is selected, the Management Tree and Common Actions Panel appear as follows:


Security
InServs
s183
Users
Domains
Domain Sets
Connections
S424
Users
Domains
Domain Sets
Connections

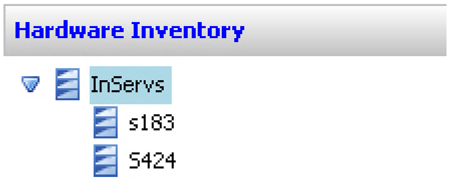

Common Actions
Create User...
Create Domain...
Move to Domain...
Create Domain Set...

See also:

[Working with the Security Manager]

Hardware Inventory Manager

The **Hardware Inventory Manager** allows you to view InServ Storage Servers hardware components. When the **Hardware Inventory Manager** is selected, the Management Tree appears as follows:


Hardware Inventory
InServs
s183
S424

See also:

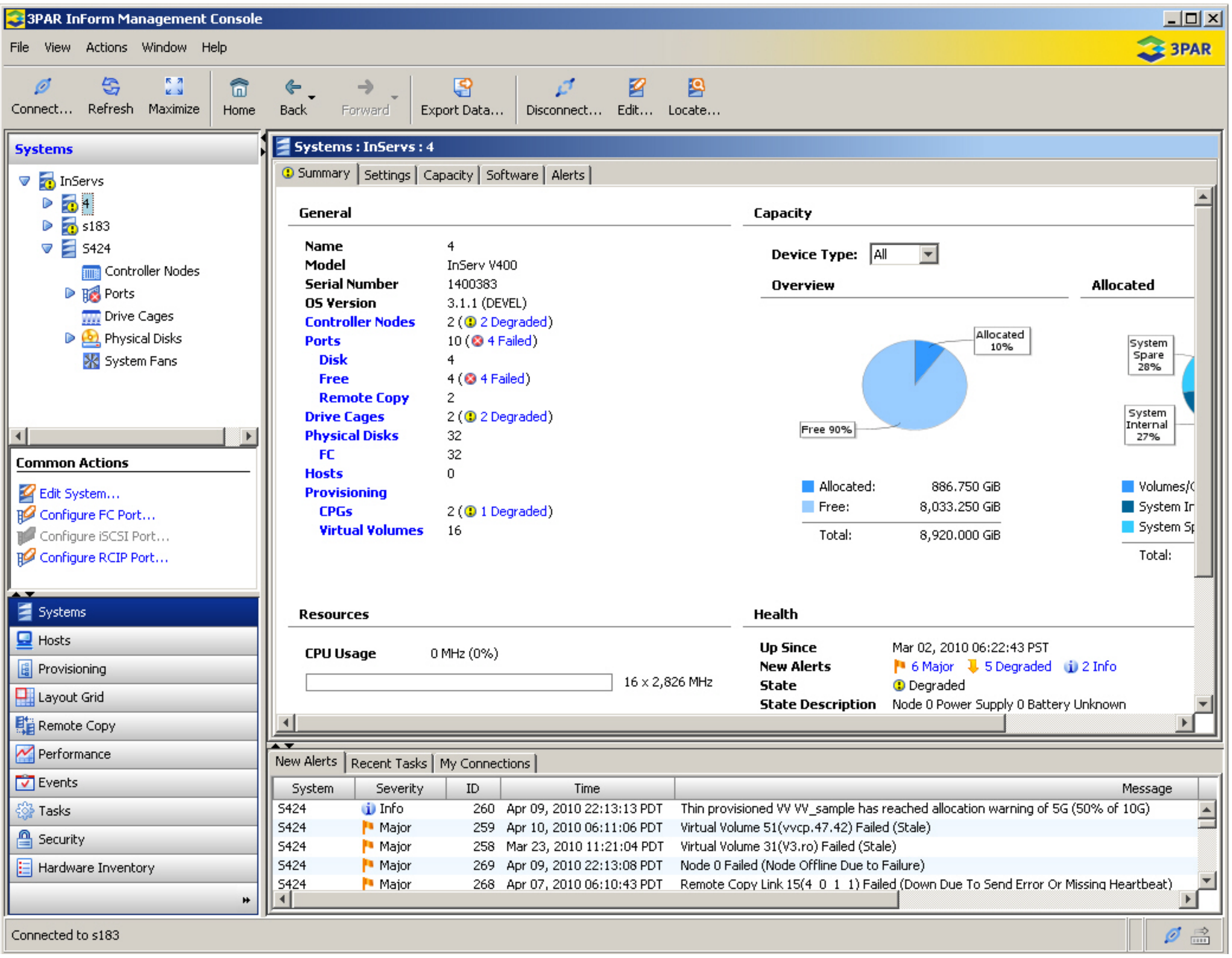
[Working with the Hardware Inventory Manager]

Management Window

The Management Window displays data, as well as additional options for viewing data. The data displayed in the Management Window is dependent on the selected manager from the Manager Pane and the selected node from the Management Tree.

Also included for quick visual reference, **Normal** ●, **Degraded** ⚠, or **Failed** ⊗ status icons are displayed in the tree to quickly identify systems or related system components that may require attention.

In the example below, the Management Window displays system summary data for the selected node, **s183**.


3PAR InForm Management Console
File View Actions Window Help
3PAR
Connect... Refresh Maximize Home Back Forward Export Data... Disconnect... Edit... Locate...
Systems
InServs
4
s183
S424
Controller Nodes
Ports
Drive Cages
Physical Disks
System Fans
Common Actions
Edit System...
Configure FC Port...
Configure iSCSI Port...
Configure RCIP Port...
Systems
Hosts
Provisioning
Layout Grid
Remote Copy
Performance
Events
Tasks
Security
Hardware Inventory
Systems : InServs : 4
Summary Settings Capacity Software Alerts
General
Capacity
Overview
Allocated
Allocated 10%
Free 90%
System Spare 28%
System Internal 27%
Volumes/(
System Ir
System Sp
Total:
Resources
Health
New Alerts Recent Tasks My Connections

General

Name	4
Model	InServ V400
Serial Number	1400383
OS Version	3.1.1 (DEVEL)
Controller Nodes	2 (⚠ 2 Degraded)
Ports	10 (⊗ 4 Failed)
Disk	4
Free	4 (⊗ 4 Failed)
Remote Copy	2
Drive Cages	2 (⚠ 2 Degraded)
Physical Disks	32
FC	32
Hosts	0
Provisioning	
CPGs	2 (⚠ 1 Degraded)
Virtual Volumes	16

Capacity

Device Type: All

Allocated:	886.750 GiB
Free:	8,033.250 GiB
Total:	8,920.000 GiB

Resources

CPU Usage 0 MHz (0%)

16 x 2,826 MHz

Health

Up Since	Mar 02, 2010 06:22:43 PST
New Alerts	6 Major 5 Degraded 2 Info
State	Degraded
State Description	Node 0 Power Supply 0 Battery Unknown

System	Severity	ID	Time	Message
S424	Info	260	Apr 09, 2010 22:13:13 PDT	Thin provisioned VV VV_sample has reached allocation warning of 5G (50% of 10G)
S424	Major	259	Apr 10, 2010 06:11:06 PDT	Virtual Volume 51(vvcp.47.42) Failed (Stale)
S424	Major	258	Mar 23, 2010 11:21:04 PDT	Virtual Volume 31(V3.ro) Failed (Stale)
S424	Major	269	Apr 09, 2010 22:13:08 PDT	Node 0 Failed (Node Offline Due to Failure)
S424	Major	268	Apr 07, 2010 06:10:43 PDT	Remote Copy Link 15(4 0 1 1) Failed (Down Due To Send Error Or Missing Heartbeat)

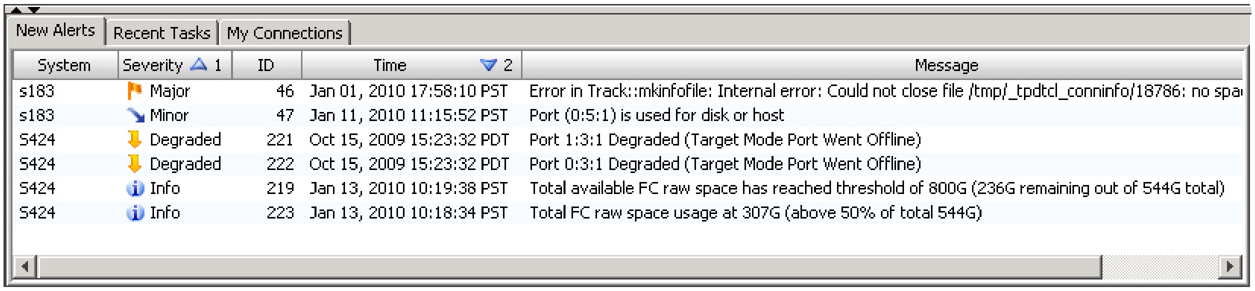
Connected to s183

See also:

- Management Tree
- Manager Pane
- System and Component Status Icons

Alert/Task/Connection Pane

The Alert/Task/Connection pane is provided for quick reference to new system alerts, recent tasks, and user connections. Each set of information is displayed on its own tab within the pane.



System	Severity 1	ID	Time 2	Message
s183	Major	46	Jan 01, 2010 17:58:10 PST	Error in Track::mkinfofile: Internal error: Could not close file /tmp/_tpdtcl_conninfo/18786: no spa
s183	Minor	47	Jan 11, 2010 11:15:52 PST	Port (0:5:1) is used for disk or host
S424	Degraded	221	Oct 15, 2009 15:23:32 PDT	Port 1:3:1 Degraded (Target Mode Port Went Offline)
S424	Degraded	222	Oct 15, 2009 15:23:32 PDT	Port 0:3:1 Degraded (Target Mode Port Went Offline)
S424	Info	219	Jan 13, 2010 10:19:38 PST	Total available FC raw space has reached threshold of 800G (236G remaining out of 544G total)
S424	Info	223	Jan 13, 2010 10:18:34 PST	Total FC raw space usage at 307G (above 50% of total 544G)

See also:

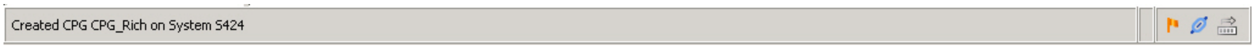
- Alert Severity Indicators
- Viewing System Alerts
- Working with the Tasks Manager
- Viewing User Connections
- Managing Alerts

Status Bar

The Status Bar is located at the bottom of the InForm Management Console.

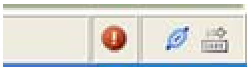
The left side of the Status Bar displays the last action performed with the InForm Management Console.

The right side of the Status Bar displays icons representing the highest alert level, connection status, and data retrieval process status.



Created CPG CPG_Rich on System S424

The right side of the Status bar also displays an icon for any runtime exceptions. The icon can be clicked to view details about the exception.



See also:

Alert Severity Indicators

Status Bar Icons

About Introduction Tabs

Managers are groups of displays and actions, which are specific to different InServ Storage Server areas of management. The selected manager affects the Management Tree display, data displayed in the Management Window, and, if applicable, the actions in the Common Actions Panel. Each manager is provided with an **Introduction** tab in the Management Window. Each **Introduction** tab contains topical overview information about the selected manager. For example, when selecting the Remote Copy Manager, the **Introduction** tab provides overview information about 3PAR Remote Copy and about tasks that can be performed in the Remote Copy Manager. The left side of the **Introduction** tabs provide links to help topics relevant to the selected manager.

Removing the Introduction Tab

A manager's **Introduction** tab can be closed at any time by clicking **Close Tab** in the upper right corner of the tab.

If you wish to hide all **Introduction** tabs in the managers:

1. Access the **Preferences** dialog box from the Main Menu Bar by clicking **View** > **Preferences**.
2. Click the **Settings** tab.
3. In the **Introduction Tabs** group box, click **Remove All Tabs**.
4. Click **Apply**.
5. Click **OK** to exit the **Preferences** dialog box.

Note: Once an **Introduction** tab is closed or hidden, it will not appear again until you manually restore the tab via **Preferences**.

Restoring the Introduction Tab

If you wish to restore closed or hidden **Introduction** tabs:

1. Access the **Preferences** dialog box from the Main Menu Bar by clicking **View** > **Preferences**.
2. Click the **Settings** tab.
3. In the **Introduction Tabs** group box, click **Restore All Tabs**.
4. Click **Apply**.
5. Click **OK** to exit the **Preferences** dialog box.

See also:

- Management Tree
- Manager Pane
- Setting Global Preferences

Selecting Multiple Items

The InForm Management Console supports the standard **Shift+click** functionality to select a contiguous block of items, and the standard **Ctrl+click** functionality to select several non-contiguous items. These functions can be used in most of the managers listed in the Manager Pane to facilitate actions.

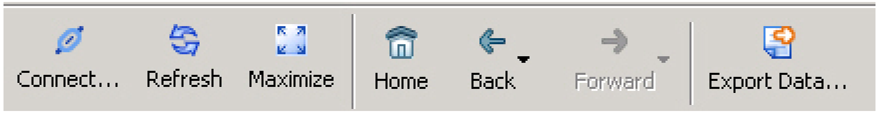
For example, when creating a virtual volume set, you can use specific virtual volumes to form the set by either using the **Shift+click** or **Ctrl+click** function to select a group of virtual volumes.

See also:

- Exporting Data
- Filtering
- Working with the Systems Manager
- Working with the Hosts Manager
- Working with the Provisioning Manager
- Working with the Layout Grid Manager
- Working with the Remote Copy Manager
- Working with the Performance Manager
- Working with the Events Manager
- Working with the Tasks Manager
- Working with the Security Manager

Refreshing the InForm Management Console

- To refresh the data displayed in the Management Window and Alert/Task/Connection Panel, click **Refresh** in the Main Toolbar.



See also:

[Main Toolbar](#)

Exporting Data

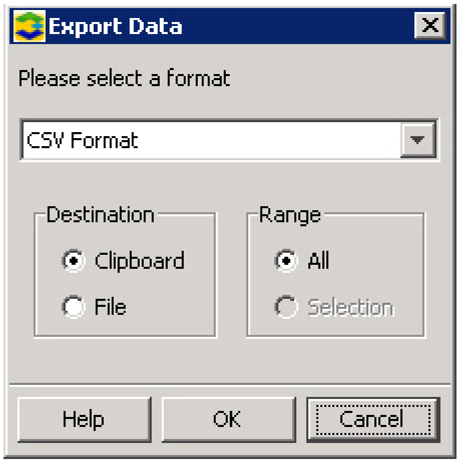
You can export data as a Comma Separated Variable (CSV) or HTML file from all InForm Management Console displays (except for Performance).

The **Export Data** dialog can be accessed by performing one of the following:

- Clicking **View** > **Export Data**.
- Clicking **Export Data** from the Main Toolbar

To export data in a currently displayed table in the Management Window:

1. Access the **Export Data** dialog.



Please select a format

CSV Format

Destination
● Clipboard
○ File

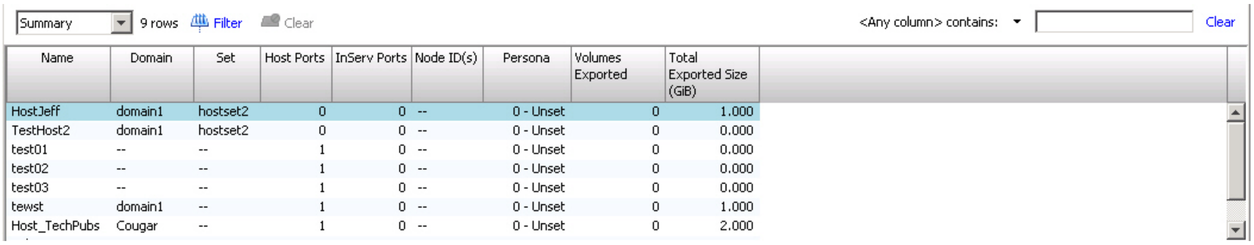
Range
● All
○ Selection

2. From the **Select a format** list, select either **CSV Format** or **HTML Format**.
3. From the **Destination** group box, select either **Clipboard** (default) or **File**.
4. If more than one row was selected from the table containing the data to be saved, from the **Range** group box, select either **All** (default) or **Selection**.

5. Click **OK**.
6. If you selected File as the save destination, the **Save Chart** dialog appears. Navigate and save the file.

Filtering

The InForm Management Console provides a filtering panel, which is located at the top of most Management Window displays.



Summary
9 rows
Filter
Clear
<Any column> contains:
Clear

Name	Domain	Set	Host Ports	InServ Ports	Node ID(s)	Persona	Volumes Exported	Total Exported Size (GiB)
HostJeff	domain1	hostset2	0	0	--	0 - Unset	0	1.000
TestHost2	domain1	hostset2	0	0	--	0 - Unset	0	0.000
test01	--	--	1	0	--	0 - Unset	0	0.000
test02	--	--	1	0	--	0 - Unset	0	0.000
test03	--	--	1	0	--	0 - Unset	0	0.000
tewst	domain1	--	1	0	--	0 - Unset	0	1.000
Host_TechPubs	Cougar	--	1	0	--	0 - Unset	0	2.000

The filtering panel provides two filtering options:

Complex Filter

Quick Filter

Using the Complex Filter

The complex filter allows you to define specific criteria by which to search.

➡Access the complex filter by clicking **Filter** on the filtering panel.

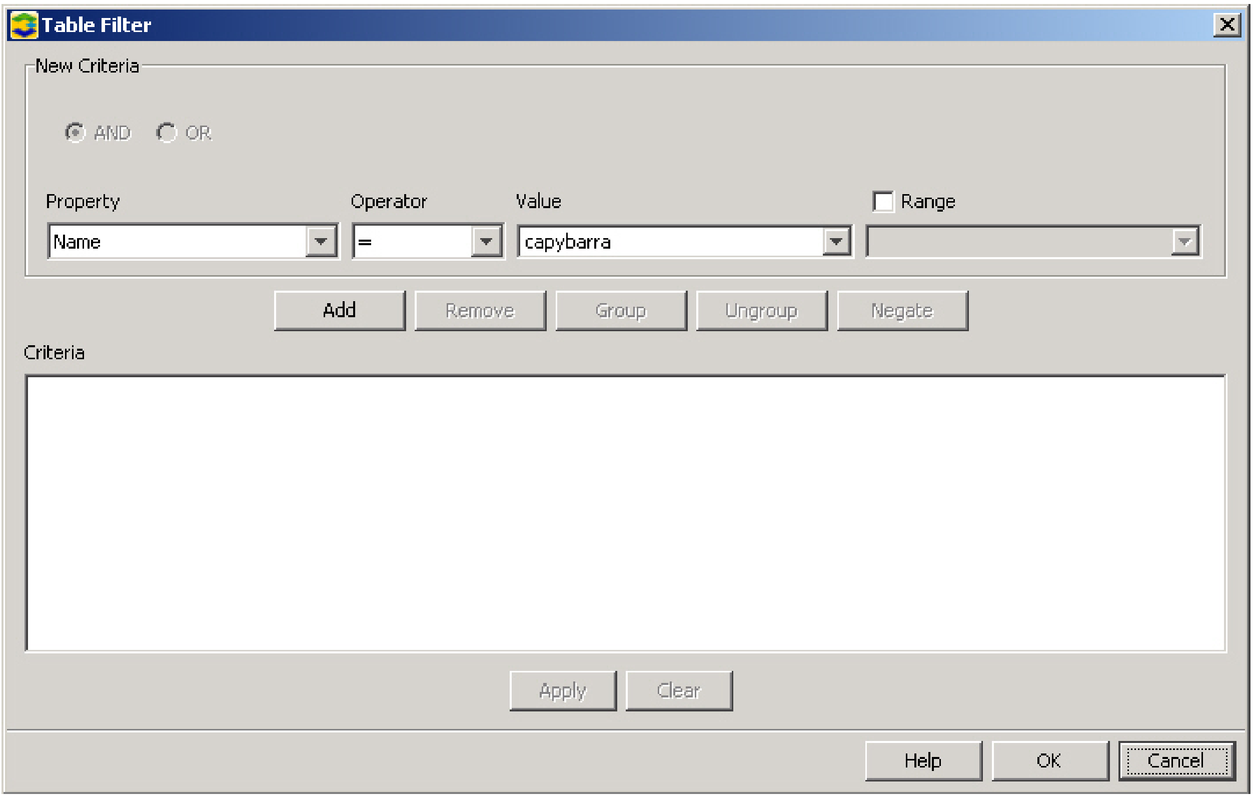


Table Filter
New Criteria
● AND ○ OR
Property
Operator
Value
☐ Range
Add
Remove
Group
Ungroup
Negate
Criteria
Apply
Clear
Help
OK
Cancel

Property: Name

Operator: =

Value: capybarra

Note: The entries listed under the **Property** list correspond to the table headings displayed in the Management Window.

Adding and Applying New Criteria

1. Select a property from the **Property** list.
2. Select an operator from the **Operator** list.
3. Select a value from the **Value** list.
4. (Optional) Select the **Range** checKiBox to define a second value to compare against the first value. This is the same as selecting **in range** from the **Operator** list.
5. Click **Apply** to apply the criteria.
6. To remove listed criteria, click **Clear**.
7. Continue to add additional criteria as needed. Repeat steps 1 through 5.

Removing Criteria

- To remove criteria defined in the Criteria filed, select the criteria and click **Remove**.

Grouping and Ungrouping Criteria

- To group criteria defined in the **Criteria** field, select two or more criteria and click **Group**.
- To ungroup a criteria group defined in the **Criteria** field, select the grouped criteria and click **Ungroup**.

Negating Criteria

- To negate criteria defined in the **Criteria** field, select the criteria and click **Negate**.

See also:

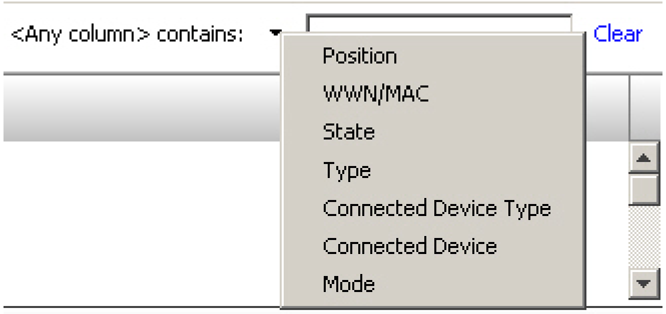
Selecting Multiple Items

Using the Quick Filter

The quick filter allows you to define a quick filter based on what filter text is typed in the top-right text box. The default behavior is to display rows that have rows matching the input text.

- You can choose to have only certain columns matching the input text by clicking the down arrow, which is located immediately to the left of the simple filter text box.

Note: The columns displayed in the filter list are dependent on the contents of the table you are currently viewing, for example ports, physical disks, etc.



Setting Preferences

The InForm Management Console allows you to set global preferences, set preferences for each table, and set Manager Pane viewing preferences.

- Setting Global Preferences
- Setting Per Table Preferences
- Setting Manager Pane Preferences

Setting Global Preferences

The **Preferences** dialog box allows you to set global preferences for all systems displayed on the InForm Management Console. These preferences are saved on the system and remembered the next time you log in using the InForm Management Console. The **Preferences** dialog box contains three tabs; **Data Format**, **Settings**, and **Advanced**.

This topic provides procedures for the following:

- Setting the Display Unit
- Setting the WWN Format
- Setting the Date and Time Format
- Resetting Per-Table Format Settings to Default Settings
- Configuring Interface, Dialog, and Tab Settings
- Setting Advanced Display Options

➡Access the **Preferences** dialog box from the Main Menu Bar by clicking **View** > **Preferences**.

Setting the Display Unit

To set the display unit:

1. Select the **Data Format** tab on the **Preferences** dialog box.
2. From the **Display Unit** group box, select the desired option (**GB** is the default display unit).
3. If you do not want to display the selected unit on the table heading row, uncheck the **Display Unit on Header** checKiBox.
4. Click **Apply** to continue modifying preferences, or click **OK** when finished.

Setting the WWN Format

To set the WWN format:

1. Select the **Data Format** tab on the **Preferences** dialog box.
2. From the **WWN** group box, select the desired WWN format (**0F0F0F0F0F0F0F0F** is the default format).
3. Click **Apply** to continue modifying preferences, or click **OK** when finished.

Setting the Date and Time Format

To set the date and time format:

1. Select the **Data Format** tab on the **Preferences** dialog box.
2. From the **Data Time** group box, select the desired data and time format (**Long Display** is the default format).
3. Click **Apply** to continue modifying preferences, or click **OK** when finished.

Resetting Per-Table Format Settings to Default Settings

To set reset per-table format settings to their default settings:

1. Select the **Data Format** tab on the **Preferences** dialog box.
2. Select the **Reset Per-Table Format Preferences to Default** checKiBox.
3. Click **OK**.

See also:

Setting Per Table Preferences

Configuring Interface, Dialog, and Tab Settings

To configure interface and dialog settings:

1. Select the **Settings** tab on the **Preferences** dialog box.
2. Select the user interface elements and dialog boxes you wish to view in the InForm Management Console Interface by selecting the appropriate checKiBoxes.
3. Select whether to view Introduction tabs by clicking **Remove All Tabs** or **Restore All Tabs**.
4. Click **Apply** to continue modifying preferences, or click **OK** when finished.

Setting Advanced Display Options

To set advanced display options:

1. Select the **Advanced** tab on the **Preferences** dialog box.
2. Select whether to view the **Port State** of **loss sync** as failed.
3. Select whether to view physical disk spares, advanced volume properties, logical disks, and SCSI reservations by selecting the appropriate checKiBoxes.
4. Click **Apply** to continue modifying preferences, or click **OK** when finished.

Setting Per Table References

The InForm Management Console allows you to set per-table preferences. These preferences are saved on the system and remembered the next time you log in using the InForm Management Console.

Note: The per-table preferences and changes made by manually dragging and sorting tables override any preferences specified when Setting Global Preferences.

This topic provides procedures for the following:

Column Resizing

Column Ordering

Column Visibility

Choosing Columns

Table View

Column Resizing

To resize a table column:

1. Place your mouse on the right edge of a table heading row.
2. When the resize pointer appears, click and drag the mouse to resize the column.

Column Ordering

➡To quickly rearrange the order of displayed table columns, click and drag any column to a different location in the table.

> **Note:** See Setting Global Preferences to learn how to make global changes to tables and InForm Management Console display properties using the **Preferences** dialog box. Changes made by clicking and dragging columns (as described in this topic) override any preferences set in the **Preferences** dialog box.

See also:

Setting Global Preferences

Column Visibility

➡To hide a column in a table, right-click the table column heading you wish to hide and click **Hide**.

> **Note:** The InForm Management Console does not allow hiding of all columns in a table.

➡To show a column in a table, right-click any table column heading and click **Show** > **<column heading>**.

Choosing Columns

To show, hide, or reorder multiple table columns at one time:

1. Right-click any table heading column and click **Choose Columns**.
2. To hide columns, select the column from the **Show** list and click the right arrow button.
3. To show columns, select the column from the **Hide** list and click the left arrow button.
4. To reorder columns, select the column from the **Show** list and click the up or down arrow button.
5. Click **OK**.

See also:

[Selecting Multiple Items]

Table View

➡To apply a saved table view, right-click any table heading column and click **Table View** > **<table view name>**.

To save the current table view as it has been edited by the previous procedures:

1. Right-click any table heading column and click **Table View** > **Save As**.
2. Enter a name for the table view you wish to save.
3. Click **OK**.

To remove a saved table view:

1. Right-click any table heading column and click **Table View** > **Remove**.
2. Enter the table view you wish to remove.
3. Click **OK**.

Setting Manager Pane Preferences

The InForm Management Console allows you to set Manager Pane display preferences. These preferences are saved on the system and remembered the next time you log in using the InForm Management Console.

This topic provides procedures for the following:

Minimizing and Maximizing the Manager Pane

Resizing the Manager Pane

Minimizing and Maximizing the Manager Pane

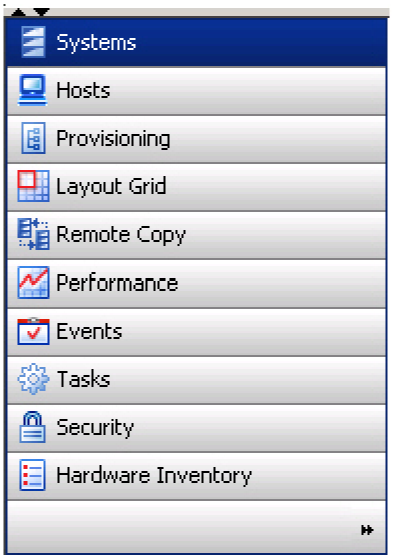
- To minimize the Manager Pane, click the down arrow located at the top of the Manager Pane.

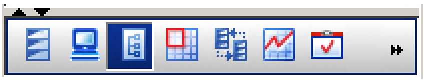
  When minimized, each manager in the Manager Pane changes to an icon.

- To maximize the Manager Pane, click, the up arrow located at the top of the minimized Manager Pane.

  When maximized, the manager icons are restored to buttons.

The following figures display the Manager Pane maximized (left figure) and minimized (right figure).





Resizing the Manager Pane

To resize the Manager Pane:

1. Place your mouse on the top edge of the Manager Pane.
2. When the resize pointer appears, click and drag the mouse to resize the column.

Note: When making the Manager Pane smaller, the Manager buttons located at the bottom of the pane change to icons. The icons are restored to buttons when enlarging the Manager Pane.

See also:

Customizing the Manager Pane Display

Manager Pane

Customizing the Manager Pane Display

The InForm Management Console allows you to customize the Manager buttons that appear in the Management Pane. This allows you to set up the Manager Pane to display only commonly used Managers. Additionally, it allows you to reduce the amount of space used by the Manager Pane, which can be useful if you have a large Management Tree.

Showing Fewer Manager Buttons

Showing More Manager Buttons

Selecting Manager Buttons to Display

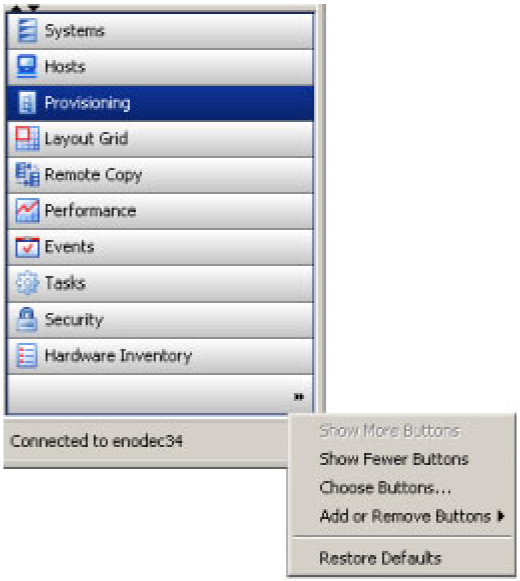
Adding and Removing Manager Buttons

Restoring Defaults

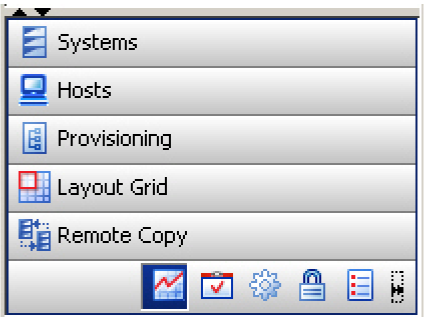
Showing Fewer Manager Buttons

By default, all Manager buttons are displayed in the Manager Pane. To display fewer buttons:

1. Click the right arrow button at the bottom of the Manager Pane.
2. Click **Show Fewer Buttons**.


Systems
Hosts
Provisioning
Layout Grid
Remote Copy
Performance
Events
Tasks
Security
Hardware Inventory
Connected to enodec34
Show More Buttons
Show Fewer Buttons
Choose Buttons...
Add or Remove Buttons
Restore Defaults

The last Manager button in the Manager Pane is minimized and is displayed as an icon at the bottom of the Manager Pane.


Systems
Hosts
Provisioning
Layout Grid
Remote Copy

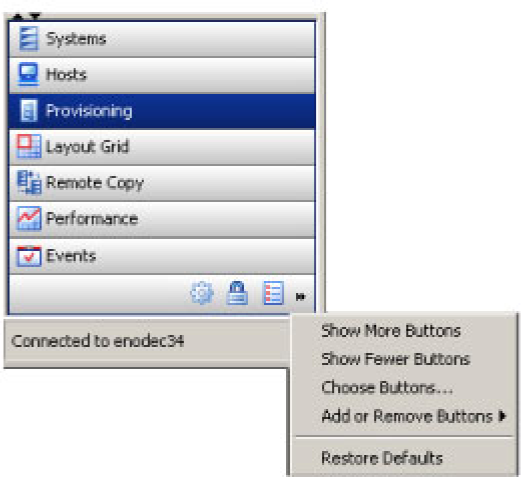
Repeating steps 1 and 2 continues to minimize Manager buttons and display them as icons at the bottom of the Manager Pane. For example, if the Hardware Manager button is minimized, the next Manager button to be minimized is the Security Manager button, followed by the Tasks Manager button, etc.

Note: The minimized Manager is still functional. Click the minimized Manager's icon to invoke that Manager's functionality.

Showing More Manager Buttons

If you have modified the Manager Pane to display fewer Manger buttons, to show more Manager buttons:

1. Click the right arrow button at the bottom of the Manager Pane.
2. Click **Show More Buttons**.


Systems
Hosts
Provisioning
Layout Grid
Remote Copy
Performance
Events
Connected to enodec34
Show More Buttons
Show Fewer Buttons
Choose Buttons...
Add or Remove Buttons
Restore Defaults

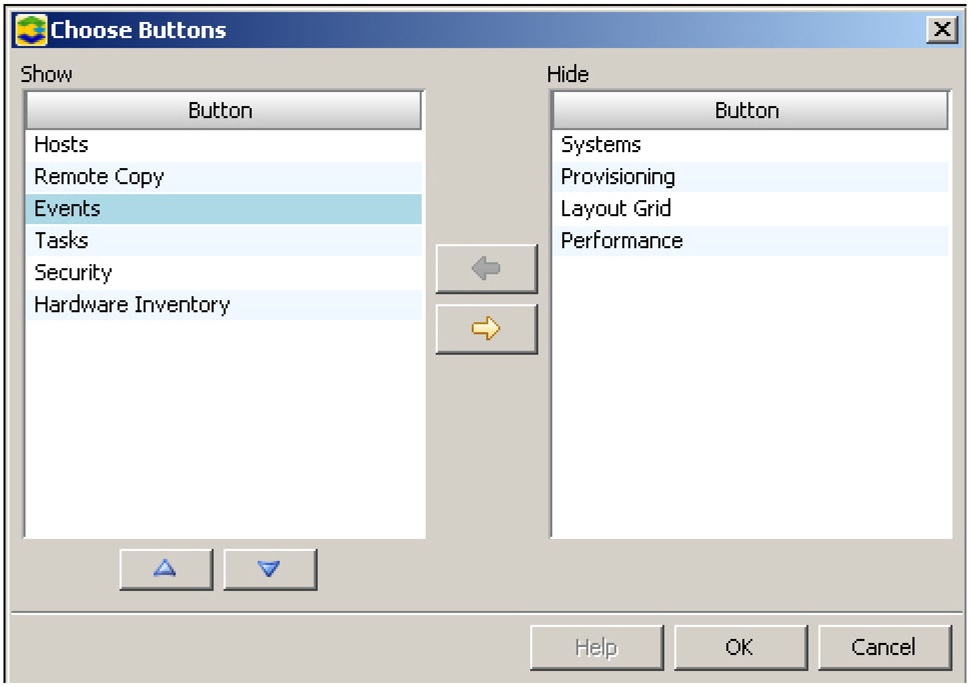
The most recently minimized Manager button is restored to the Manager Pane (the left-most displayed Manager icon).

Repeating steps 1 and 2 continues to restore Manager buttons in the order in which they were last minimized from the Manager Pane. For example, if the Tasks Manger button was restored, the next Manager button to be restored is the Security Manager button, followed by the Hardware Inventory Manager button.

Selecting Manager Buttons to Display

To select Manager buttons to show and hide in the Manager Pane:

1. Click the right arrow button at the bottom of the Manager Pane.
2. Click **Choose Buttons**.
3. In the **Choose Buttons** dialog box, select the Manager buttons to display by clicking one or more Manager and moving to the **Show** and **Hide** lists using the right and left arrow buttons.


Choose Buttons
Show
Button
Hosts
Remote Copy
Events
Tasks
Security
Hardware Inventory
Hide
Button
Systems
Provisioning
Layout Grid
Performance
Help
OK
Cancel

4. Select the order in which the Manager buttons in the **Show** list are displayed by selecting a Manager and then clicking the up and down arrow buttons to move the Manager to its display location.
5. Click **OK**.

The Manager buttons that you chose to display are displayed in the Manager Pane in the order you specified. The Manager buttons that you chose to hide are not displayed as buttons or icons in the Manager Pane.

Adding and Removing Manager Buttons

To remove Manager buttons from the Manager Pane:

1. Click the right arrow button at the bottom of the Manager Pane.
2. Click **Add or Remove Buttons** > uncheck the Manager button you wish to remove.

Note: After removing a Manager button, the Manager Pane automatically resizes itself to equal the total length of displayed Manager buttons.

To add Manager buttons to the Manager Pane:

1. Click the right arrow button at the bottom of the Manager Pane.
2. Click **Add or Remove Buttons** > check the Manager button you wish to add.

Note: When adding a Manager button back to the Manager Pane, you must manually resize the Manager Pane in order for all Manager buttons to display. See Resizing the Manager Pane.

Restoring Defaults

To restore the default view of the Manger Pane:

1. Click the right arrow button at the bottom of the Manager Pane.
2. Click **Restore Defaults**.

See also:

Setting Manager Pane Preferences

Manager Pane

Understanding Icons

The InForm Management Console uses icons for quick visual reference of alerts, system status, and system components and objects status.

Alert Severity Indicators

Status Bar Icons

System and Component Status Icons

Alert Severity Indicators

The alert pane and status bar use the following icons to indicate alert severity levels. On the status bar, the alert severity indicator tells you the severity level of the most serious alert for all systems currently connected to the InForm Management Console.

Icon	Name	Description
✖	**Fatal**	A fatal event has occurred. It is no longer possible to take remedial action.

!	**Critical**	The event is critical and requires immediate action.
⚑	**Major**	The event requires immediate action.
↘	**Minor**	An event has occurred that requires action, but the situation is not yet serious.
⬇	**Degraded**	An aspect of performance or availability may have become degraded. You must decide if action is necessary.
ℹ	**Informational**	The event is informational. No action is required other than acknowledging or removing the alert.

See also:

- Status Bar Icons
- System and Component Status Icons
- Alert/Task/Connection Pane
- Status Bar
- Managing Alerts

Status Bar Icons

The status bar displays an alert severity indicator, as well as information about your connection status and the progress of system operations.

The following icons are used:

Icon	**Name**	**Description**
See Alert Severity Indicators	**Alert Severity**	The status bar displays only the highest severity level found on connected systems.
⊘	**Auto-update not working**	Appears when auto-refresh is lost. The InForm Management Console will not receive any updated events from the InServ Storage Server.
🔗	**Connected**	Appears if at least one system is connected.

	Disconnected	Appears if at least one system is being disconnected or rebooted.
	No connection	Appears when there are no systems connected.
	Operation progress	Animated icon that indicates the progress of an operation.
!	**Exception Detected**	Appears if a runtime exception has occurred.

See also:

- Status Bar
- Alert Severity Indicators
- System and Component Status Icons
- Viewing the Internal Error Log

System and Component Status Icons

The InForm Management Console provides icons for quick reference, which display the status of connected systems, system hardware, and system objects in the Management Tree and the Management Window.

Icon	Name	Description
●	**Normal**	Indicates that the component or object is in a healthy state and is operating normally.
!	**Degraded**	Indicates that the component or object is still operational, however either the performance of the object is degraded or there is a single point of failure of a dependent component. A degraded component's status is also reflected in the status of other components where the degraded component is used. This is further reflected in the status of the system. For example, if a physical disk loses one path it can still serve data, but it is marked as degraded because the loss of the other path would cause it to fail. Because this component is degraded, this status is reflected in the components (e.g. drive cage, system) that

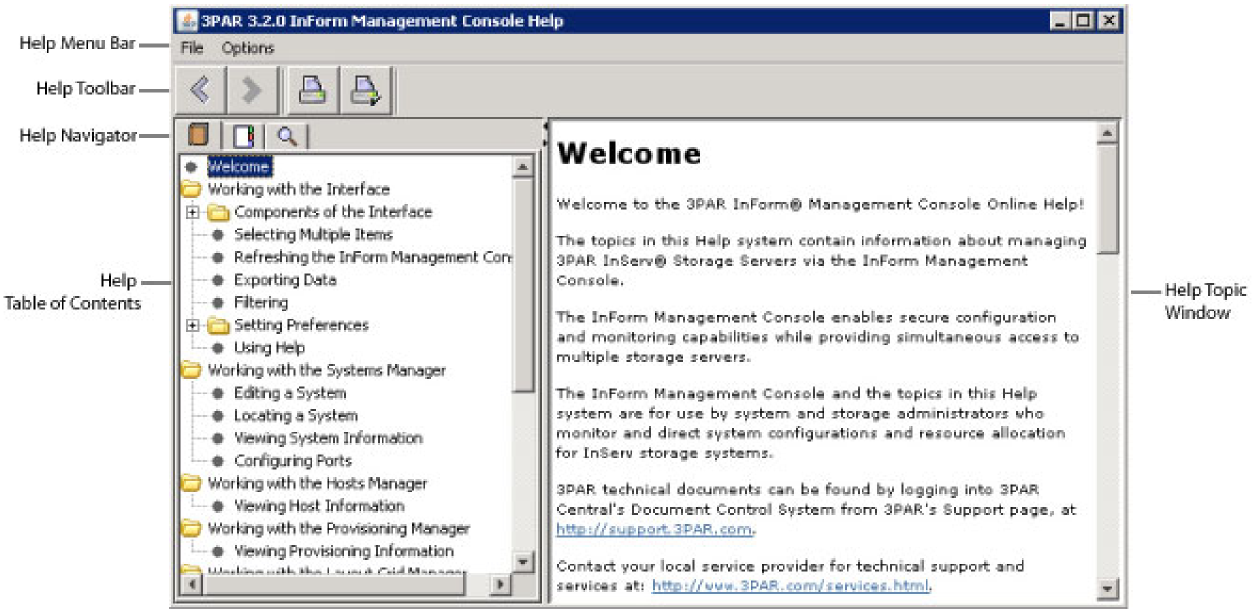
		contain that disk.
⊗	**Failed**	Indicates that the component or object is not operational. Like a degraded status, the failed status is also reflected in components and objects where the failed component or object is used.

See also:

- Alert Severity Indicators
- Status Bar Icons
- Management Tree
- Management Window

Using Help

➡Access the Help topics by clicking **Help** > **Topics** from the Main Menu Bar.


Help Menu Bar
Help Toolbar
Help Navigator
Help Table of Contents
Help Topic Window
3PAR 3.2.0 InForm Management Console Help
File
Options
Welcome
Working with the Interface
Components of the Interface
Selecting Multiple Items
Refreshing the InForm Management Con
Exporting Data
Filtering
Setting Preferences
Using Help
Working with the Systems Manager
Editing a System
Locating a System
Viewing System Information
Configuring Ports
Working with the Hosts Manager
Viewing Host Information
Working with the Provisioning Manager
Viewing Provisioning Information

Welcome

Welcome to the 3PAR InForm® Management Console Online Help!

The topics in this Help system contain information about managing 3PAR InServ® Storage Servers via the InForm Management Console.

The InForm Management Console enables secure configuration and monitoring capabilities while providing simultaneous access to multiple storage servers.

The InForm Management Console and the topics in this Help system are for use by system and storage administrators who monitor and direct system configurations and resource allocation for InServ storage systems.

3PAR technical documents can be found by logging into 3PAR Central's Document Control System from 3PAR's Support page, at http://support.3PAR.com.

Contact your local service provider for technical support and services at: http://www.3PAR.com/services.html.

The following Help Menu components are discussed further:

- Help Menu Bar
- Help Toolbar
- Help Navigator

Help Topic Window

Using the Help Menu Bar

The following menus and commands are available from the Help Menu Bar:

Menu	Command	Description
File	**Open Page**	Opens a help page URL or a local help file. **Note:** This feature is not used by the InForm Management Console Help.
	Exit	Closes the Help system.
Options	**Set Font**	Sets the font and size of the Help text.

See also:

- Using Help
- Using the Help Toolbar
- Using the Help Navigator
- Using the Help Topic Window

Using the Help Toolbar

The following shortcuts are available in the Help Toolbar located at the top of the Help system window:

Button	Command	Description
‹	**Back**	Displays the last topic viewed.

›	**Forward**	Displays the last topic viewed prior to clicking the **Back** button.
🖶	**Print Topic**	Prints the currently displayed topic.
🖶	**Print Setup**	Sets up the page to be printed.
➢	**Add to Favorites**	Adds the displayed topic to the favorites tab in the Help Navigator.

See also:

- Using Help
- Using the Help Menu Bar
- Using the Help Navigator
- Using the Help Topic Window

Using the Help Navigator

The Help Navigator provides the following five tabs:

- Table of Contents
- Index
- Search
- Glossary
- Favorites

Using the Table of Contents Tree

The **Table of Contents** tab displays a hierarchical tree that lists all Help system topics. Use the **Table of Contents** tab as follows:

- Click the **Table of Contents** tab to see the Help system table of contents.
- Double-click any folder icon to see all available topics listed under that subject heading in the table of contents. Double-clicking a folder icon also displays the first topic for that book in the Help Topic Window.
- Click any bullet icon to see the corresponding topic in the Help Topic Window.

Searching the Index

The Help system index is an alphabetical list of keywords associated with Help system topics. These keywords are defined and associated with topics by an author. Use the **Index** tab as follows:

- Click the **Index** tab to see the Help system index.
- Use the scrollbox on the right to scroll through the index contents and then click an entry to select it, or type the first few letters of a word in the **Find** box at the top of the index to jump to a specific entry in the index.
- Once you select an index entry, a list of topics appears in the topic list below the index. Double-click a topic in the topic list to view that topic in Help **Topic** Window.

Using the Search Function

The Help system search function allows you to search through all Help system contents for a specific word or words, phrase, or Boolean expression. Use the **Search** tab as follows:

- Click the **Search** tab to access the Help system search function.
- Type a word or words in the **Find** box and press **Enter** see a list of topics containing that word or words.
- When you perform a search using the **Search** tab, results appear in the table below the search box. Results are ranked according to how well they match your search criteria as follows:

  ●High

  ◕Medium-High

  ◒Medium

  ○Low

- Click a topic in the results to view that topic in the Help Topic Window.

Using the Glossary

The **Glossary** tab allows you to view terms and definitions in the Help Navigator Window. Use the **Glossary** tab as follows:

- Click the **Glossary** tab to access the Help system glossary.
- Type a word or words in the **Find** box, or choose an item from the list to see the definition appear in the bottom pane of the **Glossary** tab.

Using the Favorites Tab

The **Favorites** tab allows you to view favorite help topics you have added with the Add to Favorites button on the Main Tool Bar.

➔To view your favorites, click the **Favorites** tab and click a saved favorite.

See also:

- Using Help
- Using the Help Menu Bar
- Using the Help Toolbar
- Using the Help Topic Window

Using the Help Topic Window

The Help Topic Window displays the contents of the selected Help topic.

- Navigating the Help Topic Window
- Viewing Related Topics

Navigating the Help Topic Window

- Click any **Back to the Top** ⌃ arrow to return to the top of a Help topic.
- Use the **Back** < and **Forward** > buttons on the Help Toolbar to return to previously viewed topics.
- Use the **Previous Topic** and **Next Topic** << >> arrow buttons embedded at the top and bottom of each Help topic to navigate back and forward between topics in the Table of Contents.

See also:

- Using the Help Toolbar

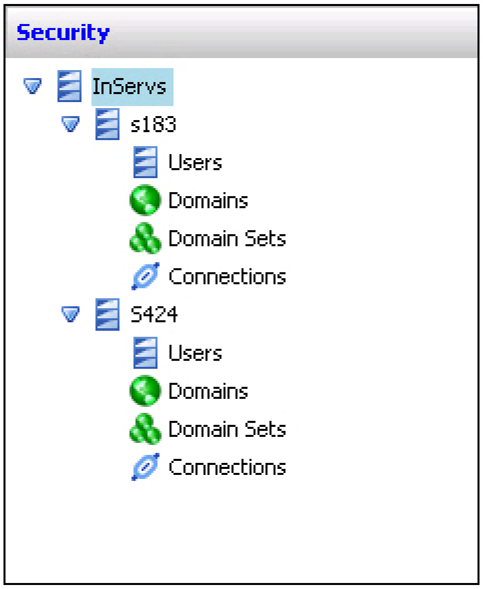
Viewing Related Topics

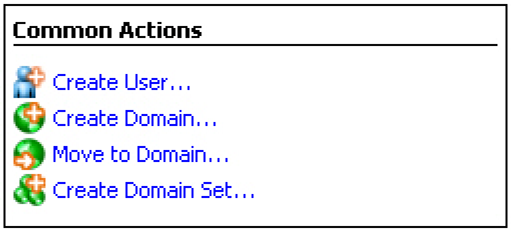
At the bottom of many sections in the Help topics are links to related topics.

The following figure displays the Security Manager section of the Manager Pane topic. The section's related topics follow the *See also:* text.

Security Manager

The Security Manager allows you to view and work with system users, domains, and connections. When the Security Manager is selected, the Management Tree and Common Actions Panel appear as follows:


Security
InServs
s183
Users
Domains
Domain Sets
Connections
S424
Users
Domains
Domain Sets
Connections


Common Actions
Create User...
Create Domain...
Move to Domain...
Create Domain Set...

See also:

[Working with the Security Manager]()

See also:

- [Using Help]()
- [Using the Help Menu Bar]()
- [Using the Help Toolbar]()
- [Using the Help Navigator]()

Working with the InServ Storage Server

This section contains the following operations:

Creating Users and Domains

Logging In and Connecting to Systems

Forwarding Error Log Files

Creating Users and Domains

A user account is required to access a 3PAR InServ Storage Server via the InForm Management Console.

To create a user account, see Creating Users. To create a domain, see Creating Domains.

Note: 3PAR Domains requires a 3PAR Domains license. See the *3PAR InForm OS Concepts Guide* for information about licenses.

See also:

Creating Domains

Creating Users

Logging In and Connecting to Systems

The InForm Management Console allows authorized users to connect to an InServ Storage Server, or multiple storage severs. In order to connect to an InServ Storage Server, you must have the following information:

- System name or IP address
- Username
- Password

To connect to an InServ Storage Server:

1. Start the InForm Management Console.

Note: Any systems previously connected to are displayed in the text box under the **IP Address or Name** text box. To select multiple systems use **CTRL+click**.

2. In the Connect dialog box, enter:
   a. the IP address or system name.
   b. your user name.
   c. your password.
3. If you do not want a secured connection, uncheck the **Secure Connection** checKiBox. Otherwise, click **OK**.
4. By clicking **Options**, you can modify the **Secure Data Port**, **Unsecured Data Port**, and **Event Port** check boxes as needed.

Forwarding Error Log Files

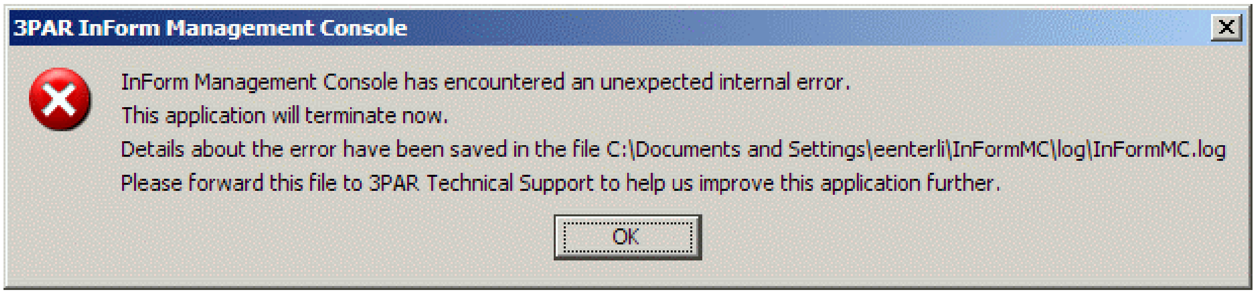
If an internal error results in the termination of the InForm Management Console, an error log file is created in your home directory with the following path and file name:

C:\...\InFormMC\log\InFormMC.log (for Windows®)

or:

informmc/log/informmc.log (for Solaris™)

An error dialog box similar to the following appears:


3PAR InForm Management Console

InForm Management Console has encountered an unexpected internal error.
This application will terminate now.
Details about the error have been saved in the file C:\Documents and Settings\eenterli\InFormMC\log\InFormMC.log
Please forward this file to 3PAR Technical Support to help us improve this application further.

If you experience an unexpected internal error while using the InForm Management Console:

1. Record the exact path and filename specified in the dialog box.
2. Note the action or sequence of actions that you were performing prior to receiving the error message.

3. Contact your local service provider for technical support and services for instructions on forwarding the error log file.

Working with the System Manager

The **System manager** allows you to perform the following:

View System Information

Manage System Alerts

Locate a System

Edit a System

Work with Controller Nodes

Work with Drive Cages

Work with Ports

See also:

Manager Pane

Management Tree

Viewing System Information

Information about your system's provisioning and network settings, capacity, current software level, and system alerts are displayed in tabular format in the **Systems** screen. Information can be displayed for all connected InServ Storage Servers, or per selected InServ Storage Server.

To view the **Systems** screen for all connected InServ Storage Servers:

1. Click **Systems** in the Manager Pane.
2. From the Management Tree, click **InServs**.

To view the **Systems** screen for a specific InServ Storage Server:

1. Click **Systems** in the Manager Pane.
2. From the Management Tree, click the InServ Storage Server you wish view.

For information about each tab displayed in the **Systems** screen, see:

Viewing System Summary Information

- Viewing System Settings
- Viewing System Capacity
- Viewing System Software
- Viewing System Alerts

See also:

- Manager Pane
- Management Tree

Viewing System Summary Information

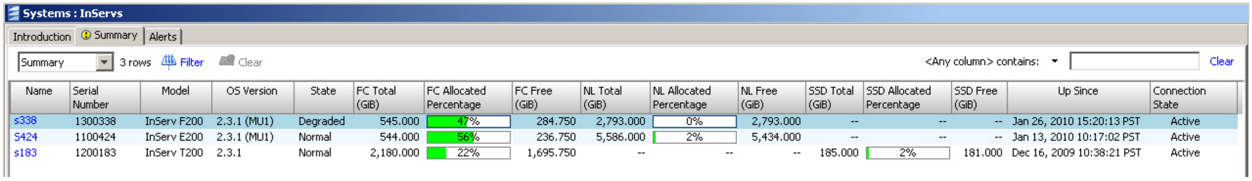
➜To view system summary information, access the **Systems** screen and then click the **Summary** tab.

The contents displayed in the **Summary** tab differs for all connected systems and for a single system.

- Viewing all Connected Systems
- Viewing a Single System

Viewing all Connected Systems

If you are viewing information for all connected systems, the **Summary** tab is displayed as follows:



Name	Serial Number	Model	OS Version	State	FC Total (GiB)	FC Allocated Percentage	FC Free (GiB)	NL Total (GiB)	NL Allocated Percentage	NL Free (GiB)	SSD Total (GiB)	SSD Allocated Percentage	SSD Free (GiB)	Up Since	Connection State
s338	1300338	InServ F200	2.3.1 (MU1)	Degraded	545.000	47%	284.750	2,793.000	0%	2,793.000	--	--	--	Jan 26, 2010 15:20:13 PST	Active
S424	1100424	InServ E200	2.3.1 (MU1)	Normal	544.000	56%	236.750	5,586.000	2%	5,434.000	--	--	--	Jan 13, 2010 10:17:02 PST	Active
s183	1200183	InServ T200	2.3.1	Normal	2,180.000	22%	1,695.750	--	--	--	185.000	2%	181.000	Dec 16, 2009 10:38:21 PST	Active

The **Summary** tab can be filtered to display **Summary** information and **Descriptor** information for all connected systems.

The following information is displayed when filtering by **Summary** information:

Column	Description
Name	The InServ Storage Server name. Each name displayed is a link to that server's Summary information.
Serial Number	The system serial number.

Model	The storage server model number.
OS Version	The InForm OS version running on the server.
State	The current state of the storage server, **Normal**, **Degraded**, or **Failed**.
FC Total	The total amount of space available from Fibre Channel devices (in GiB).
FC Allocated Percentage	The percentage of used allocated Fibre Channel device space.
FC Free	The amount of free Fibre Channel device capacity (in GiB).
NL Total	The total amount of space available from Near Line devices (in GiB).
NL Allocated Percentage	The percentage of used allocated Near Line device space.
NL Free	The amount of free Near Line device capacity (in GiB).
SSD Total	The total amount of space available from SSD devices (in GiB).
SSD Allocated Percentage	The percentage of used allocated SSD device space.
SSD Free	The amount of free SSD device capacity (in GiB).
Up Since	The date and time the system was brought online.
Connection State	The current connection state, either **Active** or **Inactive**.

Note: The InForm Management Console displays the devices currently installed in your system. For example, if you do not have Fibre Channel drives installed, the **FC** entries will not appear.

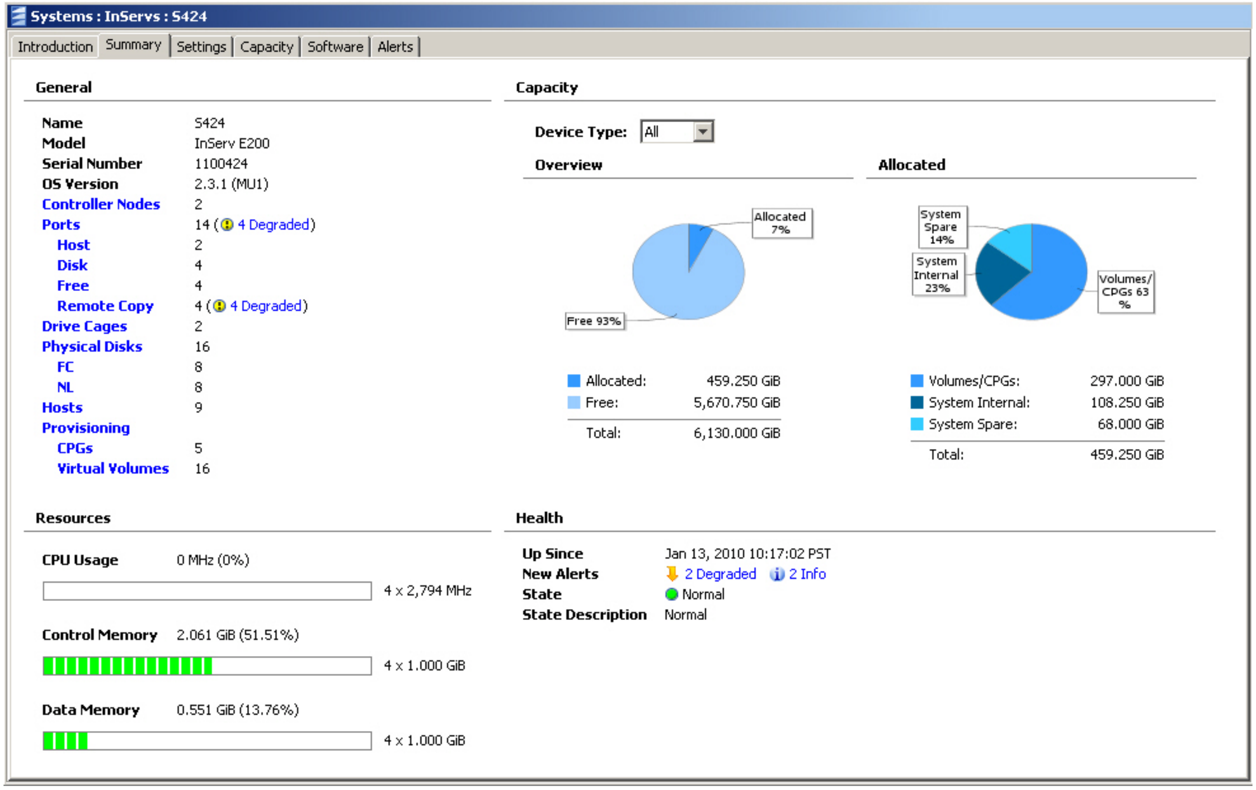
The following information is displayed when filtering by **Descriptor** information:

Column	**Description**
Name	The InServ Storage Server name. Each name displayed is a link to that server's Summary information.

Serial Number	The system serial number.
Model	The storage server model number.
Location	The physical location of the server (if entered during server setup).
Owner	The owner of the server (if entered during server setup).
Contact	Contact information for the server owner (if entered during server setup).
Comments	Any notes about the server (if entered during server setup).

Viewing a Single System

If you are viewing information for a single system, the **Summary** tab is displayed as follows:


Systems : InServs : S424
Introduction
Summary
Settings
Capacity
Software
Alerts
Allocated 7%
Free 93%
System Spare 14%
System Internal 23%
Volumes/ CPGs 63 %

General

Name	S424
Model	InServ E200
Serial Number	1100424
OS Version	2.3.1 (MU1)
Controller Nodes	2
Ports	14 (4 Degraded)
Host	2
Disk	4
Free	4
Remote Copy	4 (4 Degraded)
Drive Cages	2
Physical Disks	16
FC	8
NL	8
Hosts	9
Provisioning	
CPGs	5
Virtual Volumes	16

Capacity

Device Type: All

Overview

Allocated:	459.250 GiB
Free:	5,670.750 GiB
Total:	6,130.000 GiB

Allocated

Volumes/CPGs:	297.000 GiB
System Internal:	108.250 GiB
System Spare:	68.000 GiB
Total:	459.250 GiB

Resources

CPU Usage 0 MHz (0%)
4 x 2,794 MHz

Control Memory 2.061 GiB (51.51%)
4 x 1.000 GiB

Data Memory 0.551 GiB (13.76%)
4 x 1.000 GiB

Health

Up Since	Jan 13, 2010 10:17:02 PST
New Alerts	2 Degraded 2 Info
State	Normal
State Description	Normal

The **Summary** tab for a single system displays the following information:

Group	Field	Description
General	**Name**	The storage server's name.
	Model	The model number of the storage server.
	Serial Number	The storage server's serial number.
	OS Version	The current InForm OS version.
	Controller Nodes	The total number of controller nodes.
	Ports	The total number of ports in the system.
	Host	The number of host ports.
	Disk	The number of disk ports.
	Free	The number of free ports.
	Remote Copy	The number of Remote Copy ports.
	Drive Cages	The total number of drive cages.
	Physical Disks	The total number of physical disk drives.
	FC	The number of Fibre Channel drives.
	NL	The number of Near Line drives.
	SSD	The number of SSD drives.

Note: The InForm Management Console displays the devices currently installed in your system. For example, if you do not have Fibre Channel drives installed, the **FC** field will not appear on the **Summary** tab.

	Hosts	The total number of hosts.
	Provisioning	
	CPGs	The total number of CPGs.
	Virtual Volumes	The total number of virtual volumes.

Resources	**CPU Usage**	The current CPU usage in MHz and percentage.
	Control Memory	The current control memory usage in GiB and percentage.
	Data Memory	The current data memory usage in GiB and percentage.
Capacity	**Device**	List of device types. The selected device type affects the display of the data displayed in the **Overview** and **Allocated** fields.
	Overview	The overview of allocated and free space per device type in the system displayed graphically, in percentage, and in GiB.
	Allocated	The amount of allocated space used by provisioning, sparing, and internal system structures and processes (such as logging logical disks, admin volume, etc.) displayed graphically, in percentage, and in GiB.
Health	**Up Since**	The date and time the storage server was brought online.
	New Alerts	Any new alerts. Any displayed alerts are links to the Systems Alerts tab.
	State	The state of the storage server; **Normal**, **Degraded**, or **Failed**. See System and Component Status Icons.
	State Description	A description of the displayed state.

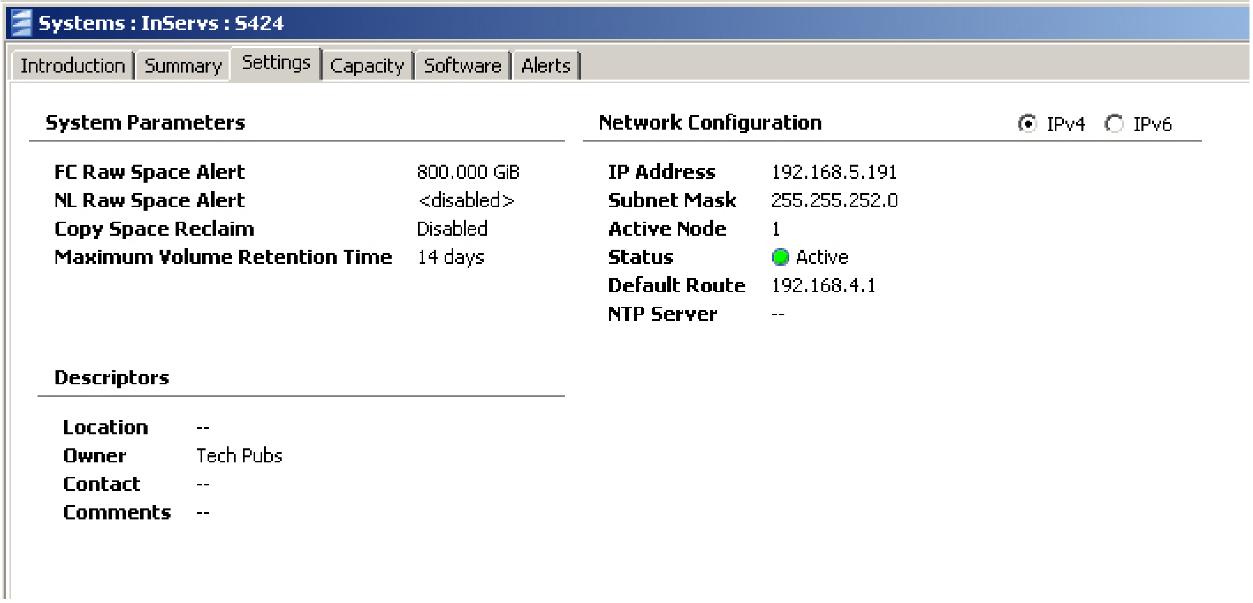
See also:

- Editing a System
- Locating a System
- Working with Drive Cages
- Working with Controller Nodes
- Working with Ports

Viewing System Settings

To view a specific system's settings information, access the **Systems** screen and then click the **Settings** tab.

The **Settings** tab appears as follows:



System Parameters

FC Raw Space Alert	800.000 GiB
NL Raw Space Alert	<disabled>
Copy Space Reclaim	Disabled
Maximum Volume Retention Time	14 days

Network Configuration ● IPv4 ○ IPv6

IP Address	192.168.5.191
Subnet Mask	255.255.252.0
Active Node	1
Status	● Active
Default Route	192.168.4.1
NTP Server	--

Descriptors

Location	--
Owner	Tech Pubs
Contact	--
Comments	--

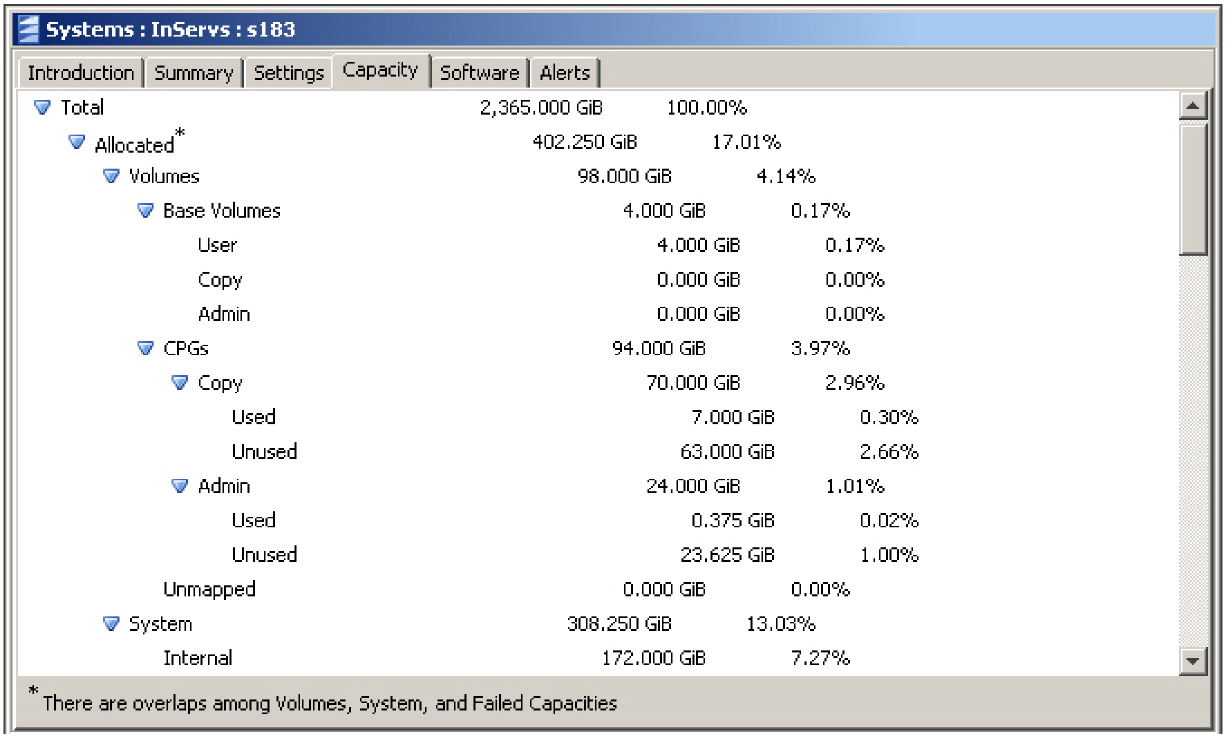
The **Settings** tab displays the following information:

Group	Field	Description
System Parameter	**FC Raw Space Alert**	The raw space alert threshold (in GiB) for Fibre Channel devices.
	NL Raw Space Alert	The raw space alert threshold (in GiB) for Near Line devices.
	SSD Raw Space Alert	The raw space alert threshold (in GiB) for SSD devices.
Note: The InForm Management Console displays the devices currently installed in your system. For example, if you do not have Fibre Channel drives installed, the **FCRaw Space Alert** field will not appear on the **Settings** tab.		
	Copy Space Reclaim	Indicates if the copy space reclaim feature is **Enabled** or **Disabled**.
	Maximum Volume Retention Time	The set maximum volume retention time.
Descriptors	**Location**	Location of the server (if entered).

	Owner	The owner of the server (if entered).
	Contact	Contact information (if entered).
	Comments	Any notes about the server (if entered).
Network Configuration	**IPv4/IPv6**	Radio buttons indicating if you wish to view either IPv4 or IPv6 network configuration information. If your system is not configured for IPv6, the IPv6 button is disabled.
	IP Address	The server's IP address.
	Subnet Mask	(If IPv4 was selected) The subnet mask.
	Prefix	(If IPv6 was selected) The decimal value indicating the number of contiguous, higher-order bits of the address that make up the network portion of the address.
	Active Node	The active system node.
	Status	The status of the server.
	Default Route	The default routing IP address.
	NTP Server	The NTP server, if any.

Viewing System Capacity

➡ To view a single system's capacity information, access the **Systems** screen and then click the **Capacity** tab.



```
▽ Total                     2,365.000 GiB   100.00%
  ▽ Allocated*                402.250 GiB    17.01%
    ▽ Volumes                   98.000 GiB     4.14%
      ▽ Base Volumes              4.000 GiB     0.17%
          User                      4.000 GiB     0.17%
          Copy                      0.000 GiB     0.00%
          Admin                     0.000 GiB     0.00%
      ▽ CPGs                     94.000 GiB     3.97%
        ▽ Copy                      70.000 GiB     2.96%
            Used                       7.000 GiB     0.30%
            Unused                    63.000 GiB     2.66%
        ▽ Admin                     24.000 GiB     1.01%
            Used                       0.375 GiB     0.02%
            Unused                    23.625 GiB     1.00%
        Unmapped                  0.000 GiB     0.00%
    ▽ System                   308.250 GiB    13.03%
        Internal                172.000 GiB     7.27%
```

* There are overlaps among Volumes, System, and Failed Capacities

Raw capacity for the selected InServ Storage Server is displayed for **Total**, **Fibre Channel**, **Near Line**, and **Solid State** capacities. Each of these top level capacity items can be further expanded to the following:

Note: In the normal situation, the capacity displays show you the space that is consumed by provisioning (e.g. CPGs, Volumes, and underlying LDs) and the space that is reserved by the system for spares.

When chunklets or PDs fail, the data that was on those chunklets is moved onto the spares. The total amount of space consumed by provisioning does not change, nor does the total amount of spares in the system. However, there is an overlap in the numbers because the used spares are counted in the total number of spares (total spares = unused + used spares) AND in the provisioning (because parts of the LDs/CPGs/Volumes) are now using those spares. In this case, an asterisk (*) appears to indicate that the numbers will not add up due to this shared space.

Field	Description
+ Total	Total amount of usable storage on the storage server.
+ Allocated	Amount of storage capacity currently allocated.
+ Volumes	Amount of storage allocated to volumes.
+ Base Volumes	Amount of volume space allocated to base volumes.
- User	Amount allocated for base volume user space, copy space and admin space.
- Copy	
- Admin	
+ CPGs	Amount of volume space allocated to CPGs.
+ Copy	Amount of CPG space allocated to Copy.
- Used	Amount of Copy space that is used or not used.
- Unused	
+ Admin	Amount of CPG space allocated to

	admin.
- Used	Amount of admin space that is used or not used.
- Unused	
- Unmapped	Amount of volume space that is not mapped.
+ System	Amount of allocated space used by the system.
- Internal	Amount of system space used internally.
+ Spares	Amount of space allocated to spares.
- Used	Spare space allocated for LDs when underlying PDs have failed.
- Unused	Unused space.
+ Free	Amount of free space on the system, regardless of initialized or not.
- Initialized	Amount of initialized free space on the system.
- Uninitialized	Amount of uninitialized free space

	on the system. This includes any chunklets that are currently being cleaned.
- Failed	Amount of failed space.
+ Fibre Channel	Total amount of Fibre Channel (FC) storage on the storage server.
Note: Subcontents of the **Fibre Channel Total** display are identical to the **Total display** at the top of this table.	
+ Nearline	Total amount of Nearline (NL) storage on the storage server.
Note: Subcontents of the **Nearline Total** display are identical to the **Total display** at the top of this table.	
+ Solid State	Total amount of Solid State (SSD) storage on the storage server.
Note: Subcontents of the **Solid State Total** display are identical to the **Total display** at the top of this table.	

Note: Only device types (**Fibre Channel**, **Nearline**, and **Solid State**) that are on your system are displayed. For example, if your system contains only Fibre Channel drives, only Fibre Channel capacity is displayed.

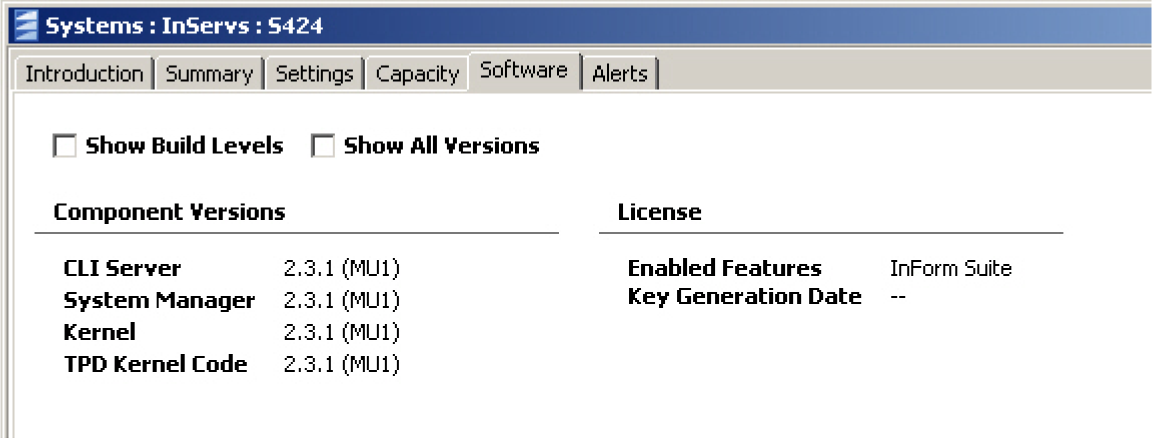
See also:

Working with the Hardware Inventory Manager

Viewing System Software

➜To view a single system's software information, access the **Systems** screen and then click the **Software** tab.

The **Software** tab displays the **Component Versions** of each software feature and the **License** information. By default, the **Component Versions** include the **CLI Server**, **System Manager**, **Kernel**, and **TPD Kernel Code**. The **License** information includes **Enabled Features** and the **Key Generation Date**.



Component Versions

CLI Server	2.3.1 (MU1)
System Manager	2.3.1 (MU1)
Kernel	2.3.1 (MU1)
TPD Kernel Code	2.3.1 (MU1)

License

Enabled Features	InForm Suite
Key Generation Date	--

➜If you wish to view the build level of the **Component Versions**, click the **Show Build Levels** checKiBox.

➜If you wish to view versions of all system software, click **Show All Versions**.

Viewing System Alerts

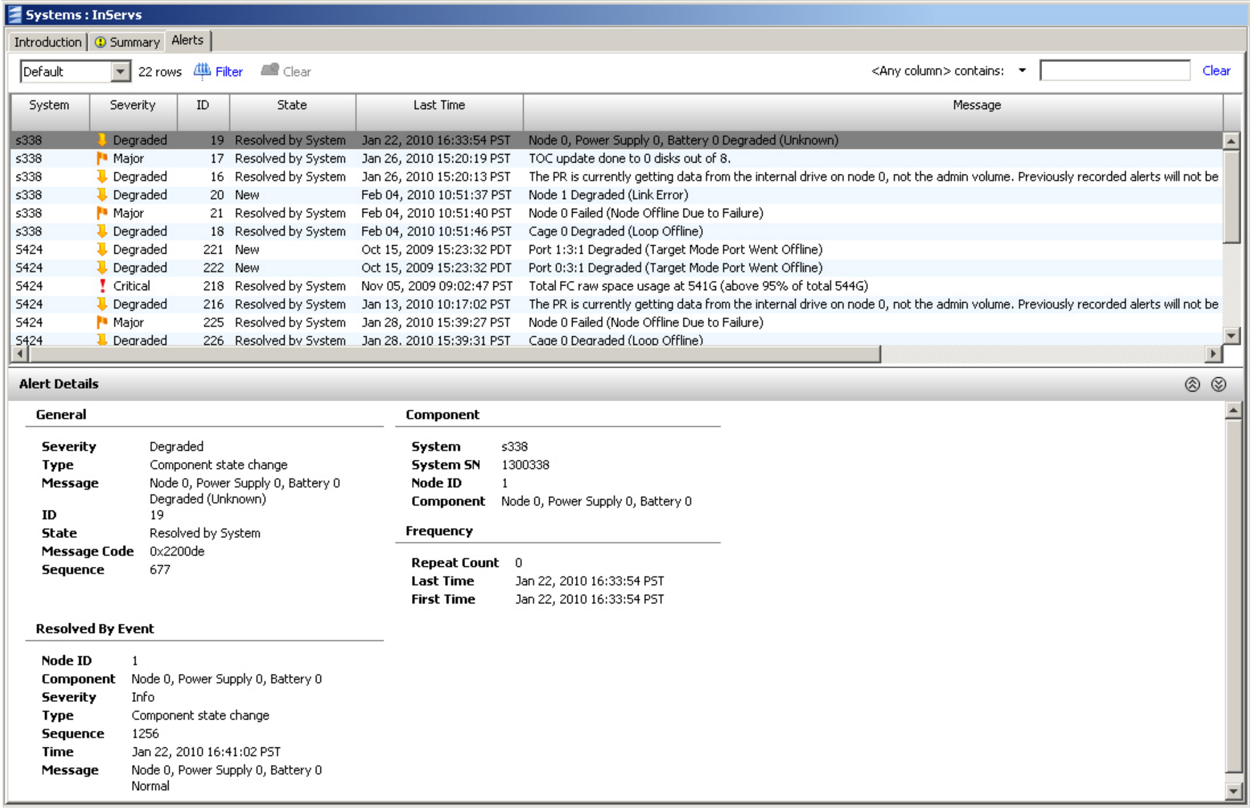
➜To view system alert information, access the **Systems** screen and then click the **Alerts** tab.

or

1. In the Manager Pane, click **Events**.
2. In the Management Tree, click the **InServs** node or a system node.
3. In the Management Window, click the **Alerts** tab.

The **Alerts** tab is split into an upper pane and lower pane. The upper pane display a summary of the alerts. The lower pane displays the details of an alert selected in the upper pane.

The information displayed in the **Alerts** tab is nearly identical between the information displayed for all connected systems and information displayed for a single system, with the only exception being an additional **System** column appears in the upper pane for all connected systems. The following figure displays the **Alerts** tab for all connected systems.



System	Severity	ID	State	Last Time	Message
s338	Degraded	19	Resolved by System	Jan 22, 2010 16:33:54 PST	Node 0, Power Supply 0, Battery 0 Degraded (Unknown)
s338	Major	17	Resolved by System	Jan 26, 2010 15:20:19 PST	TOC update done to 0 disks out of 8.
s338	Degraded	16	Resolved by System	Jan 26, 2010 15:20:13 PST	The PR is currently getting data from the internal drive on node 0, not the admin volume. Previously recorded alerts will not be
s338	Degraded	20	New	Feb 04, 2010 10:51:37 PST	Node 1 Degraded (Link Error)
s338	Major	21	Resolved by System	Feb 04, 2010 10:51:40 PST	Node 0 Failed (Node Offline Due to Failure)
s338	Degraded	18	Resolved by System	Feb 04, 2010 10:51:46 PST	Cage 0 Degraded (Loop Offline)
S424	Degraded	221	New	Oct 15, 2009 15:23:32 PDT	Port 1:3:1 Degraded (Target Mode Port Went Offline)
S424	Degraded	222	New	Oct 15, 2009 15:23:32 PDT	Port 0:3:1 Degraded (Target Mode Port Went Offline)
S424	Critical	218	Resolved by System	Nov 05, 2009 09:02:47 PST	Total FC raw space usage at 541G (above 95% of total 544G)
S424	Degraded	216	Resolved by System	Jan 13, 2010 10:17:02 PST	The PR is currently getting data from the internal drive on node 0, not the admin volume. Previously recorded alerts will not be
S424	Major	225	Resolved by System	Jan 28, 2010 15:39:27 PST	Node 0 Failed (Node Offline Due to Failure)
S424	Degraded	226	Resolved by System	Jan 28, 2010 15:39:31 PST	Cage 0 Degraded (Loop Offline)

General

Severity	Degraded
Type	Component state change
Message	Node 0, Power Supply 0, Battery 0 Degraded (Unknown)
ID	19
State	Resolved by System
Message Code	0x2200de
Sequence	677

Resolved By Event

Node ID	1
Component	Node 0, Power Supply 0, Battery 0
Severity	Info
Type	Component state change
Sequence	1256
Time	Jan 22, 2010 16:41:02 PST
Message	Node 0, Power Supply 0, Battery 0 Normal

Component

System	s338
System SN	1300338
Node ID	1
Component	Node 0, Power Supply 0, Battery 0

Frequency

Repeat Count	0
Last Time	Jan 22, 2010 16:33:54 PST
First Time	Jan 22, 2010 16:33:54 PST

The upper and lower panes are described in greater detail below.

- Upper Pane
- Lower Pane

Upper Pane

The upper pane of the **Alerts** tab displays the following:

Column	Description
System	The system on which the alert occurred.
Severity	The severity of the alert. See Alert Severity Indicators.

ID	The alert ID.
State	The alert state.
Last Time	The last occurrence of the alert.
Message	A brief description of the alert.
Repeat Count	The number of times the alert has been issued.
First Time	The first occurrence of the alert.

Lower Pane

The lower pane of the **Alerts** tab displays detailed information about an alert selected in the upper pane. The lower pane displays the following information:

Group	Field	Description
General	**Severity**	The alert severity. See Alert Severity Indicators.
	Type	The alert type.
	Message	A brief description of the alert.
	ID	The alert ID.
	State	The alert state.
	Message Code	The alert message code.
	Sequence	The alert sequence.
Resolved by Event	**Node ID**	The controller node ID.
	Component	The component for which the alert was issued.
	Severity	The alert severity. See Alert Severity Indicators.
	Type	The alert type.

	Sequence	The alert sequence.
	Time	The time the alert was resolved.
	Message	A brief description of the alert.
Component	**System**	The name of the server that generated the alert.
	System SN	The server's serial number.
	Node ID	The node ID.
	Component	The affected system components.
Frequency	**Repeat Count**	The number of times the alert was issued.
	Last time	The last occurrence of the alert.
	First time	The first occurrence of the alert.

See also:

- Alert Severity Indicators
- Alert/Task/Connection Pane
- Viewing the Alerts Summary
- Managing Alerts
- Viewing System Events
- Exporting Data

Managing Alerts

Once you have accessed and viewed the system alerts, either from the Alert/Task/Connection Pane or from the **Alerts** tab on the **Systems** screen, you can apply the following actions to any selected alert.

- Acknowledge the alert
- Mark the alert as new
- Mark the alert as fixed
- Remove the alert

To apply an action to an alert:

➡ If you accessed the alert from the Alert/Task/Connection Pane, right-click the alert and click **Acknowldege**, **Mark as Fixed**, **Remove**, or **Show Details**.

➡ If you accessed the alert from the **Alerts** tab on the Systems screen, right-click the alert and click **Acknowldege**, **Mark as Fixed**, **Mark as New**, **Remove**, or **Show Details**.

See also:

Alert/Task/Connection Pane

Viewing System Alerts

Alert Severity Indicators

Locating a System

This operation helps locate an InServ Storage Server by oscillating the node status LEDs amber and green on all nodes of the storage server. If desired, the LEDs in all connected drive cages are also set amber or oscillate, depending on the drive cage type.

Note: This operation can only be performed by users with Super, Service,or Edit privilege levels.

To locate an InServ Storage Server:

1. Click **Systems** in the Manager Pane.
2. From the Management Tree, right-click the InServ Storage Server you wish to locate and then click **Locate System**.
3. Select a **Duration** for the LED(s) to oscillate (from **1** and **255** seconds).

4. Optionally, if you want the drive cage LEDs to turn amber or oscillate as well, click the **Include Cage(s)** checKiBox.
5. Click **OK** to start the locate.

> **Note:** This operation can only be performed by users with Super, Service,or Edit privilege levels.

See also:

[Manager Pane]()

[Management Tree]()

Editing a System

You can edit the identification, identification information, properties, and alert settings for any InServ Storage Server connected to the InForm Management Console.

> **Note:** Editing storage servers can only be performed by users with Super, Service, and Edit privilege levels.

To edit a storage server, access the **Edit System** wizard.

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, click the system you wish to edit.
3. In the Common Actions Panel, click **Edit System**.

   The **Edit System** wizard appears.

In the **Edit System** wizard, edit the following information as needed:

1. In the **General** group box, select the following:
   a. **Name** - enter a new system name.
   b. **FC Raw Space Alert** - Select whether to enable or disable the raw space alert for Fiber Channel drives. If **Enabled**, enter a value from **100** to **100,000** GiB.
   c. **NL Raw Space Alert** - Select whether to enable or disable the raw space alert for Nearline drives. If **Enabled**, enter a value from **100** to **100,000** GiB.
   d. **SSD Raw Space Aler**t - Select whether to enable or disable the raw space alert for SSD drives. If **Enabled**, enter a value from **100** to **100,000** GiB.

> **Note:** These fields only appear for devices installed on the system. For example, if your system contains no SSD drives, the **SSD Raw Space Alert** field will not be present.

   e. Select whether to enable or disable the **Copy Space Reclaim** feature, which reclaims logical disk space.
   f. To select a **Maximum Volume Retention** time, select **Enabled**, select **hour(s)** or **day(s)**, and then enter a value of **1** to **1,825** (days) or **1** to **43,800** (hours).

2. In the **Descriptors** group box, enter the following:
   a. **Location** - Enter the physical location of the storage server; for example, **Lab 1**.
   b. **Owner** - Enter the owner of the storage server.
   c. **Contact** - Enter any contact information.
   d. **Comments** - Enter any relevant notes about the storage server.
3. Click **OK**.

   The storage server is updated accordingly.

See also:

- Manager Pane
- Management Tree
- Common Actions Panel
- Viewing System Information

Working with Controller Nodes

The InForm Management Console allows you to:

- View Controller Nodes
- Edit Controller Node Power Supplies
- Edit Controller Node Batteries
- Recharge Controller Node Batteries

Viewing Controller Nodes

The **Controller Nodes** screen displays summary information about system controller nodes and node components. The **Controller Nodes** screen is divided into an upper pane, which displays summary information about the nodes, and a lower pane, which displays detailed information about the nodes and node components.

To access the **Controller Nodes** screen:

1. Click **Systems** in the Manager Pane.
2. In the Management Tree, select **Controller Nodes** under the system whose controller node information you wish to view.

The upper pane of the **Controller Nodes** screen is provided with two tabs; **Summary** and **Alerts**.

The lower pane of the **Controller Nodes** screen provides five tabs; **Summary**, **Ports**, **Power Supplies**, **Batteries**, and **Alerts**.

For information about the upper pane, see:

- Viewing the Controller Nodes Summary Screen
- Viewing Controller Nodes Alerts

For information about the lower pane, see:

- Viewing Controller Nodes Details
- Viewing Controller Node Ports Details
- Viewing Controller Nodes Power Supplies Details
- Viewing Controller Nodes Batteries Details
- Viewing Controller Nodes Alerts Details

See also:

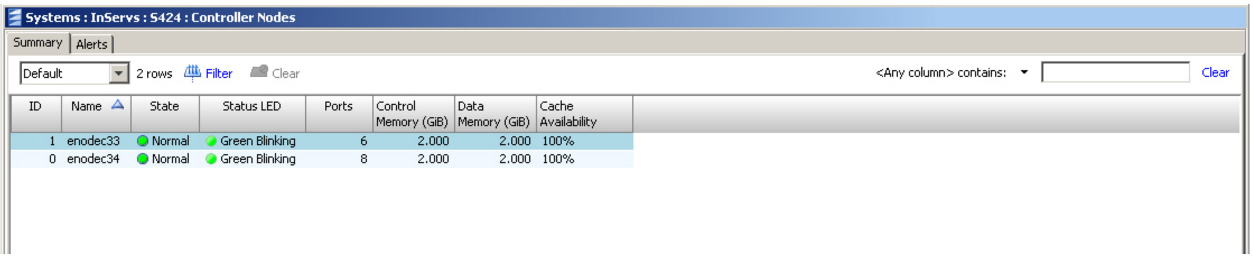
- Manager Pane
- Management Tree

Viewing the Controller Nodes Summary Screen

To view the Controller Nodes Summary screen:

1. Access the **Controller Nodes** screen.
2. In the upper pane, click the **Summary** tab.

The **Summary** tab appears as follows:



ID	Name	State	Status LED	Ports	Control Memory (GiB)	Data Memory (GiB)	Cache Availability
1	enodec33	● Normal	● Green Blinking	6	2.000	2.000	100%
0	enodec34	● Normal	● Green Blinking	8	2.000	2.000	100%

The **Summary** tab provides the following information:

Column	Description
ID	The node ID.
Name	The node name.
State	The current state of the node; either **Normal**, **Degraded**, or **Failed**. See System and Component Status Icons.
Status LED	The current status of the node, as indicated by the node LED.
Ports	The total number of ports on the node.
Control Memory	The amount of control memory (in GiB).
Data Memory	The amount of data memory (in GiB).
Cache Availability	The percentage of available cache space.

See also:

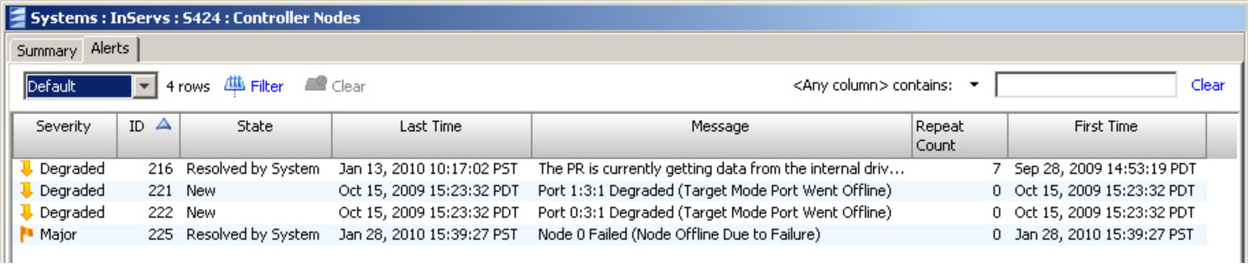
- Viewing Controller Nodes
- System and Component Status Icons

Viewing Controller Node Alerts

To view the Controller Node alerts screen:

1. Access the **Controller Nodes** screen.
2. In the upper pane, click the **Alerts** tab.

The **Alerts** tab appears as follows:



Severity	ID	State	Last Time	Message	Repeat Count	First Time
Degraded	216	Resolved by System	Jan 13, 2010 10:17:02 PST	The PR is currently getting data from the internal driv...	7	Sep 28, 2009 14:53:19 PDT
Degraded	221	New	Oct 15, 2009 15:23:32 PDT	Port 1:3:1 Degraded (Target Mode Port Went Offline)	0	Oct 15, 2009 15:23:32 PDT
Degraded	222	New	Oct 15, 2009 15:23:32 PDT	Port 0:3:1 Degraded (Target Mode Port Went Offline)	0	Oct 15, 2009 15:23:32 PDT
Major	225	Resolved by System	Jan 28, 2010 15:39:27 PST	Node 0 Failed (Node Offline Due to Failure)	0	Jan 28, 2010 15:39:27 PST

The **Alerts** tab provides the following information:

Column	Description
Severity	The severity of the alert. See Alert Severity Indicators.
ID	The alert ID.
State	The alert state.
Last Time	The last occurrence of the alert.
Message	A brief description of the alert.
Repeat Count	The number of times the alert has been issued.
First Time	The first occurrence of the alert.

See also:

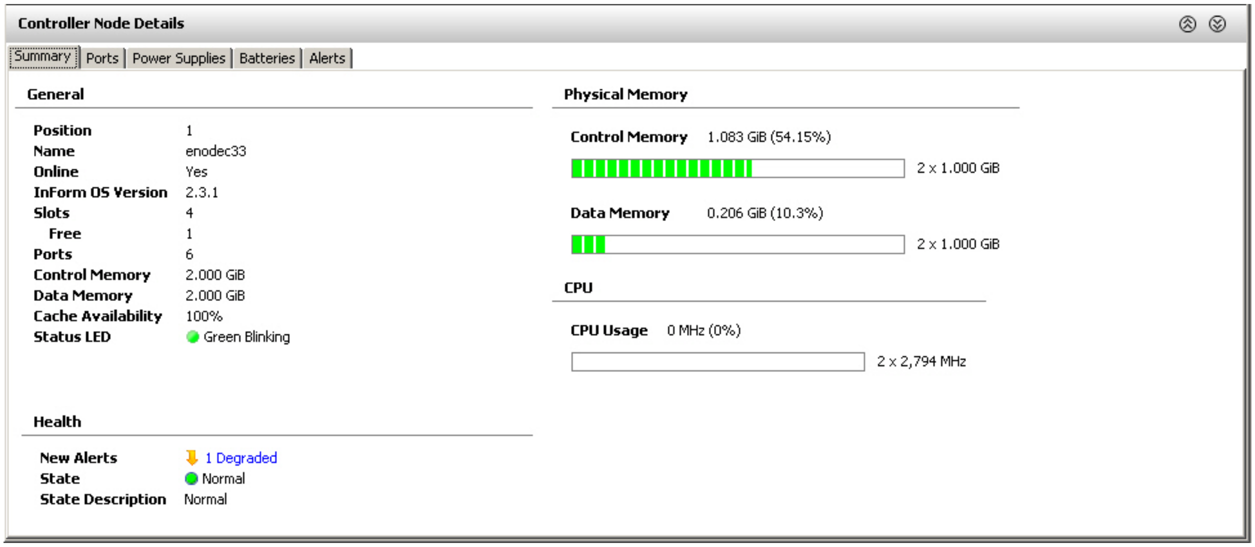
- Viewing Controller Nodes
- Viewing Controller Nodes Alerts Details
- Alert Severity Indicators
- Managing Alerts

Viewing Controller Nodes Details

To view the Controller Node details screen:

1. Access the **Controller Nodes** screen.
2. In the upper pane, click the **Summary** tab.
3. Select a node.
4. In the lower pane, click the **Summary** tab.

The **Summary** tab appears as follows:



General

Position	1
Name	enodec33
Online	Yes
InForm OS Version	2.3.1
Slots	4
Free	1
Ports	6
Control Memory	2.000 GiB
Data Memory	2.000 GiB
Cache Availability	100%
Status LED	● Green Blinking

Health

New Alerts	1 Degraded
State	● Normal
State Description	Normal

Physical Memory

Control Memory 1.083 GiB (54.15%) 2 x 1.000 GiB

Data Memory 0.206 GiB (10.3%) 2 x 1.000 GiB

CPU

CPU Usage 0 MHz (0%) 2 x 2,794 MHz

The **Summary** tab provides the following information:

Group	Field	Description
General	**Position**	The position of the node in the node chassis.
	Name	The node name.
	Online	Indicates if the node is online.
	InForm OS Version	The InForm OS version.
	Slots	The total number of slots on the node.
	Free	The number of unused slots on the node.
	Ports	The total number of ports on the node.
	Control Memory	The amount of control memory, in GiB.
	Data Memory	The amount of data memory, in GiB.
	Cache Availability	The percentage of available cache.
	Status LED	The current status of the node, as indicated by the node LED.
Health	**New Alerts**	Any new alerts. See Alert Severity Indicators.
	State	Current state of the node, either **Normal**, **Degraded**, or **Failed**. See System and Component Status Icons.
	State Description	Description of the node state.
Physical Memory	**Control Memory**	The amount of used control memory, displayed in GiB and percentage.
	Data Memory	The amount of used data memory, displayed in GiB and percentage.

CPU	**CPU Usage**	The current CPU usage, displayed in MHz and percentage.

See also:

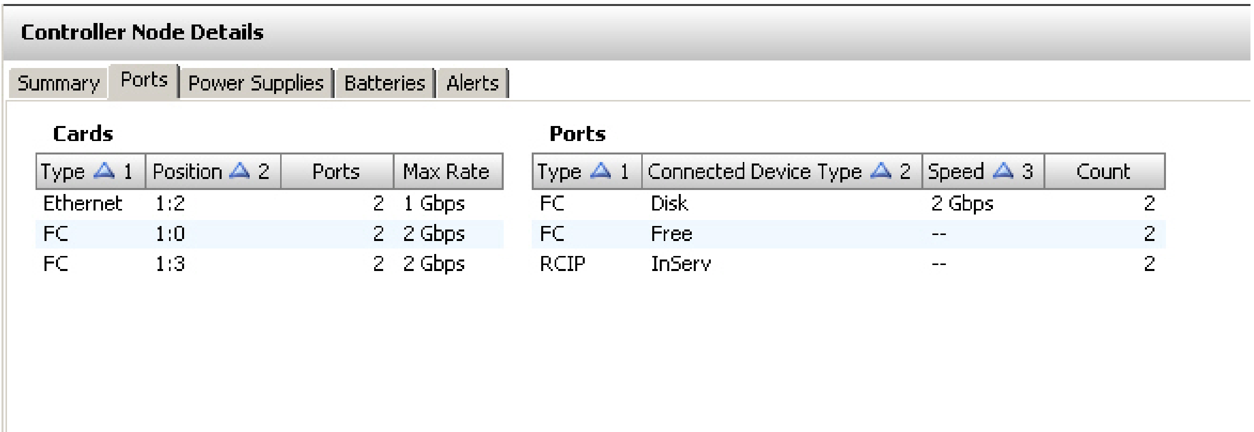
- Viewing the Controller Nodes Summary Screen
- Alert Severity Indicators
- System and Component Status Icons

Viewing Controller Node Ports Details

To view the Controller Node Ports detail screen:

1. Access the **Controller Nodes** screen.
2. In the upper pane, click the **Summary** tab.
3. Select a node.
4. In the lower pane, click the **Ports** tab.

The **Ports** tab appears as follows:



Cards

Type △ 1	Position △ 2	Ports	Max Rate
Ethernet	1:2	2	1 Gbps
FC	1:0	2	2 Gbps
FC	1:3	2	2 Gbps

Ports

Type △ 1	Connected Device Type △ 2	Speed △ 3	Count
FC	Disk	2 Gbps	2
FC	Free	--	2
RCIP	InServ	--	2

The **Ports** tab provides the following information:

Group	Column	Description
Cards	**Type**	The type of interface card, either **Ethernet** or Fibre Channel (**FC**).
	Position	The position of the card in node:slot format.
	Ports	The number of ports on the interface.
	Max Rate	The maximum rate in Gbps.
Ports	**Type**	The port type, Fibre Channel (**FC**), **iSCSI**, Remote Copy over IP (**RCIP)**, or Remote Copy over Fibre Channel (**RCFC**).
	Connected Device Type	The connected device type, **Free**, **Disk**, **Host**, or **InServ**.
	Speed	The speed of the port in Gbps.
	Count	The number of ports.

See also:

Viewing the Controller Nodes Summary Screen

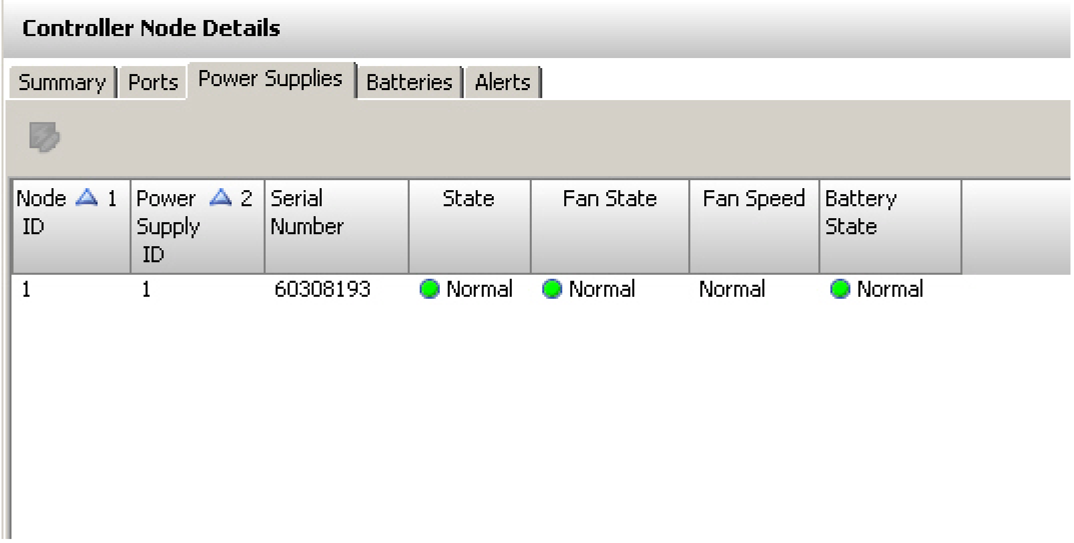
Working with Ports

Viewing Controller Node Power Supplies Details

To view the Controller Node Power Supplies details screen:

1. Access the **Controller Nodes** screen.
2. In the upper pane, click the **Summary** tab.
3. Select a node.
4. In the lower pane, click the **Power Supplies** tab.

The **Power Supplies** tab appears as follows:



Node ID 1	Power Supply ID 2	Serial Number	State	Fan State	Fan Speed	Battery State
1	1	60308193	● Normal	● Normal	Normal	● Normal

The **Power Supplies** tab provides the following information:

Column	Description
Node ID	The node ID.
Power Supply ID	The power supply ID.
Serial Number	The power supply serial number.
State	The state of the power supply. See System and Component Status Icons.
Fan State	The fan state, **Normal**, **Degraded**, or **Failed**. See System and Component Status Icons.
Fan Speed	The current fan speed.
Battery State	The power supply battery state, **Normal**, **Degraded**, or **Failed**. See System and Component Status Icons.

See also:

System and Component Status Icons

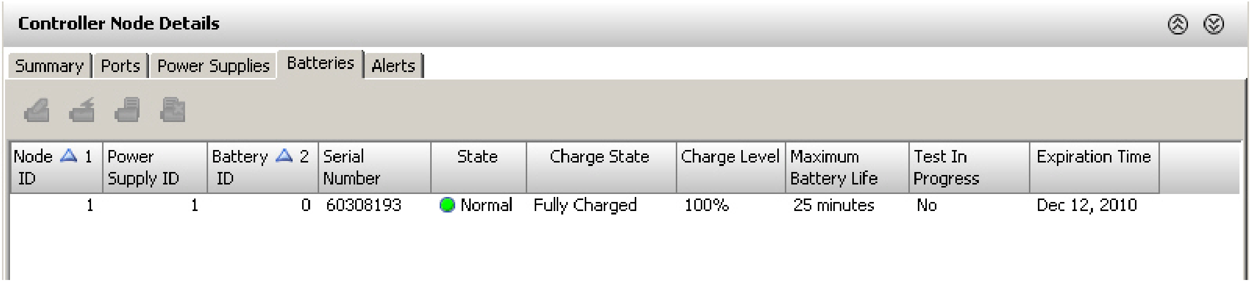
Viewing the Controller Nodes Summary Screen

Viewing Controller Node Batteries Details

To view the Controller Node Batteries details screen:

1. Access the **Controller Nodes** screen.
2. In the upper pane, click the **Summary** tab.
3. Select a node.
4. In the lower pane, click the **Batteries** tab.

The **Batteries** tab appears as follows:



Node △ 1 ID	Power Supply ID	Battery △ 2 ID	Serial Number	State	Charge State	Charge Level	Maximum Battery Life	Test In Progress	Expiration Time
1	1	0	60308193	● Normal	Fully Charged	100%	25 minutes	No	Dec 12, 2010

The **Batteries** tab provides the following information:

Column	Description
Node ID	The node ID.
Power Supply ID	The power supply ID.
Battery ID	The battery ID.
Serial Number	The battery serial number.
State	The state of the battery. See System and Component Status Icons.
Charge State	The charge state of the battery.
Charge Level	The charge level of the battery.
Maximum Battery Life	The battery's maximum life.
Test In Progress	Indicates if any tests are in progress.

Expiration Time	The battery expiration date.

See also:

System and Component Status Icons

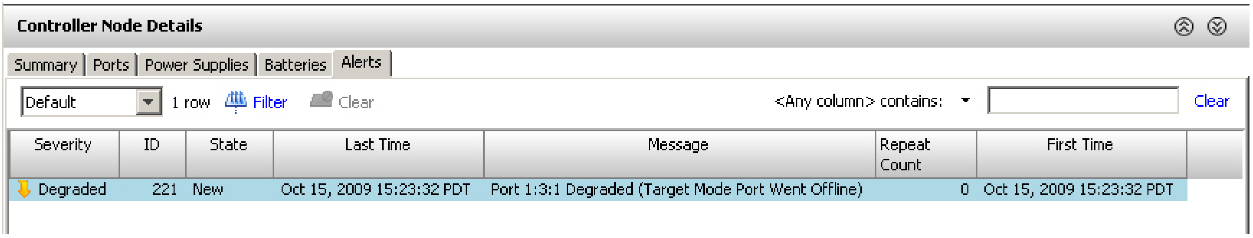
Viewing the Controller Nodes Summary Screen

Viewing Controller Node Alerts Details

To view the Controller Node Alerts details screen:

1. Access the **Controller Nodes** screen.
2. In the upper pane, click the **Summary** tab.
3. Select a node.
4. In the lower pane, click the **Alerts** tab.

The **Alerts** tab displays the information for a specific node as selected in the upper pane and appears as follows:


Controller Node Details
Summary
Ports
Power Supplies
Batteries
Alerts
Default
1 row
Filter
Clear
<Any column> contains:
Clear

Severity	ID	State	Last Time	Message	Repeat Count	First Time
Degraded	221	New	Oct 15, 2009 15:23:32 PDT	Port 1:3:1 Degraded (Target Mode Port Went Offline)	0	Oct 15, 2009 15:23:32 PDT

The **Alerts** tab provides the following information:

Column	Description
Severity	The severity of the alert. See Alert Severity Indicators.
ID	The alert ID.
State	The alert state.
Last Time	The last occurrence of the alert.

Message	A brief description of the alert.
Repeat Count	The number of times the alert has been issued.
First Time	The first occurrence of the alert.

See also:

Alert Severity Indicators

Viewing the Controller Nodes Summary Screen

Viewing Controller Nodes Alerts

Editing Controller Node Power Supplies

The InForm Management Console allows you to edit the serial number of a controller node power supply.

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, click **Controller Nodes** under the system whose power supply you wish to edit.
3. In the lower **Controller Node Details** pane displayed in Management Window, select the **Power Supplies** tab.
4. Right-click the power supply whose serial number you wish to edit and click **Edit**.
5. Enter a new alphanumeric serial number in the **Serial Number** field using numeric characters **0** to **9** and alphabetic characters **A** to **F**.
6. Click **OK**.

See also:

Manager Pane

Management Tree

Management Window

Viewing Controller Nodes Power Supplies Details

Editing Controller Node Batteries

The InForm Management Console allows you to edit controller node batteries.

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, click **Controller Nodes** under the system whose batteries you wish to edit.
3. In the lower **Controller Node Details** pane displayed in Management Window, select the **Batteries** tab.
4. Right-click the battery you wish to edit and click **Edit**.
5. Enter a new alphanumeric serial number in the **Serial Number** field using numeric characters **0** to **9** and alphabetic characters **A** to **F**.
6. Enter a new battery expiration date in the **Expiration Time** field. You can alternately click the calendar button to the right of the field and select a date from the calendar that appears.
7. Click **OK**.

See also:

Manager Pane

Management Tree

Management Window

Viewing the Controller Node Battery Test Log

To view the controller node battery test log:

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, click **Controller Nodes** under the system whose batteries you wish to edit.
3. In the lower **Controller Node Details** pane displayed in Management Window, select the **Batteries** tab.
4. Right-click the battery whose test log you wish to view and click **Show Test Log**.

Resetting the Controller Node Battery Test Log

To reset the controller node battery test log:

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, click **Controller Nodes** under the system whose batteries you wish to edit.
3. In the lower **Controller Node Details** pane displayed in Management Window, select the **Batteries** tab.
4. Right-click the battery whose test log you wish to reset and click **Reset Test Log**.
5. Click **Yes** when prompted for confirmation.

Recharging Controller Node Batteries

The InForm Management Console allows you to recharge controller node batteries.

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, click **Controller Nodes** under the system whose batteries you recharge.
3. In the lower **Controller Node Details** pane displayed in Management Window, select the **Batteries** tab.
4. Right-click the battery you wish to recharge and click **Re-charge**.
5. Click **Yes** when the battery recharge confirmation dialog box appears.

See also:

Manager Pane

Management Tree

Management Window

Working with Drive Cages

The InForm Management Console allows you to:

View Drive Cages

Edit Drive Cages

Locate Drive Cages

Edit Drive Cage Power Supplies

Viewing Drive Cages

The **Drive Cages** screen displays summary information about system drive cages and drive cage components.

To access the Drive Cages screen:

1. Click **Systems** in the Manager Pane.
2. In the Management Tree, select **Drive Cages** under the system whose drive cage information you wish to view.

The **Drive Cages** screen provides four tabs, **Summary**, **Power Supplies**, **SFPs**, and **Alerts**. For information about each, see:

Viewing the Drive Cage Summary

Viewing Drive Cage Power Supplies

Viewing Drive Cage SFPs

Viewing Drive Cage Alerts

Additionally, you can view drive cage details. See:

Viewing Drive Cage Details

See also:

Manager Pane

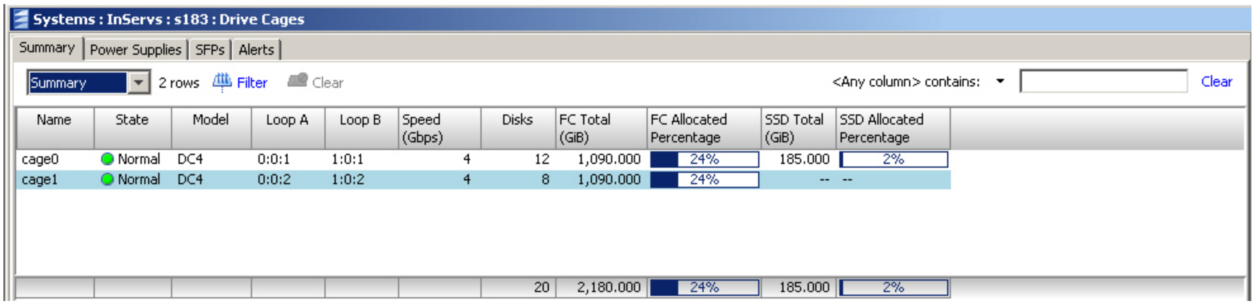
Management Tree

Viewing the Drive Cage Summary

To view the Drive Cage Summary screen:

1. Access the **Drive Cages** screen.
2. In the upper pane, click the **Summary** tab.

The **Summary** tab appears as follows:



Name	State	Model	Loop A	Loop B	Speed (Gbps)	Disks	FC Total (GiB)	FC Allocated Percentage	SSD Total (GiB)	SSD Allocated Percentage
cage0	● Normal	DC4	0:0:1	1:0:1	4	12	1,090.000	24%	185.000	2%
cage1	● Normal	DC4	0:0:2	1:0:2	4	8	1,090.000	24%	--	--
						20	2,180.000	24%	185.000	2%

The **Summary** tab provides the following information:

Column	Description
Name	The drive cage name.
State	The drive cage state. See System and Component Status Icons.
Model	The drive cage model.
Loop A	The port on the InServ Storage Server to which the A loop is connected.
Loop B	The port on the InServ Storage Server to which the B loop is connected.
Speed	The port speed in Gbps.
Disks	The number of disks in the drive cage. The bottom of the **Disks** column displays a total disk count.
FC Total	The total Fibre Channel capacity in GiB. The bottom of the **FC Total** column displays total FC capacity.
FC Allocated Percentage	The percentage of used Fibre Channel capacity. The bottom of the **FC Allocated Percentage** column displays the total used percentage.
SSD Total	The total SSD capacity in GiB. The bottom of the **SSD Total** column displays total SSD capacity.

SSD Allocated Percentage	The percentage of used SSD capacity. The bottom of the **SSD Allocated Percentage** column displays the total used percentage.
Note: The device types displayed in the summary are dependent on the devices installed in your system. For example, if you have Near Line and disk drives installed, the summary will display **NL** (Near Line) **Total**, **NL Allocated Percentage** columns.	

The **Summary** tab can be further filtered to view drive cage connectivity and drive cage capacity.

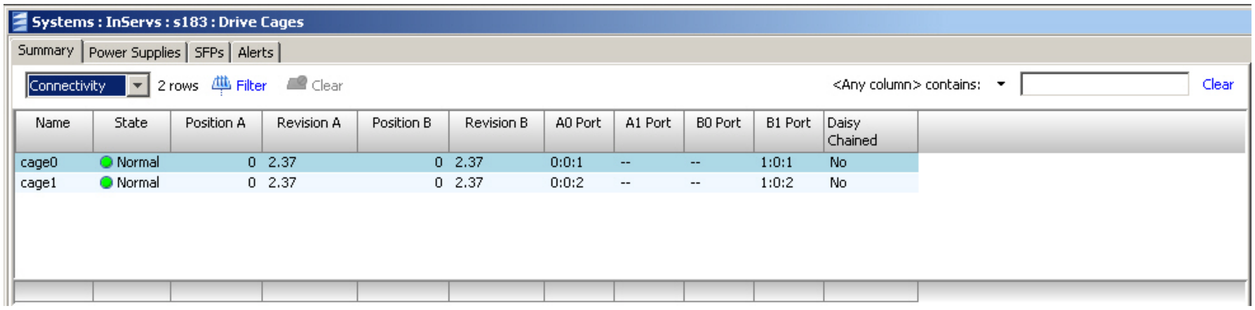
Viewing_Drive_Cage_Connectivity

Viewing_Drive_Cage_Capacity

Viewing Drive Cage Connectivity

➡To view drive cage connectivity information, select **Connectivity** from the filter list.

The connectivity summary appears as follows:



Name	State	Position A	Revision A	Position B	Revision B	A0 Port	A1 Port	B0 Port	B1 Port	Daisy Chained
cage0	● Normal	0	2.37	0	2.37	0:0:1	--	--	1:0:1	No
cage1	● Normal	0	2.37	0	2.37	0:0:2	--	--	1:0:2	No

The following information is provided:

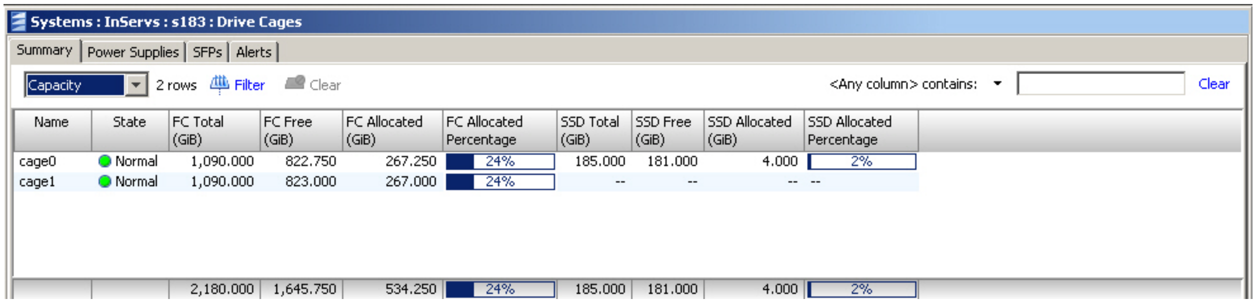
Column	Description
Name	The drive cage name.
State	The drive cage state. See System and Component Status Icons.
Position A	Distance the drive cage is from the controller node port. (**0** = directly connected to InServ ports, **1**= there is one device between the node and this drive cage, etc).
Revision A	Version of firmware running on the controller for the A loop.
Position B	Distance the drive cage is from the controller node port. (**0** = directly connected to InServ Storage Server ports, **1**= there is one device between the node and this drive cage, etc).
Revision B	Version of firmware running on the controller for the B loop.

A0 Port	Controller node initiator port connected to drive cage port **A0**.
A1 Port	Controller node initiator port connected to drive cage port **A1**.
A2 Port (for DC3 drive cages)	Controller node initiator port connected to drive cage port **A2**.
A3 Port (for DC3 drive cages)	Controller node initiator port connected to drive cage port **A3**.
B0 Port	Controller node initiator port connected to drive cage port **B0** .
B1 Port	Controller node initiator port connected to drive cage port **B1**.
B2 Port (for DC3 drive cages)	Controller node initiator port connected to drive cage port **B2**.
B3 Port (for DC3 drive cages)	Controller node initiator port connected to drive cage port **B3**.
Daisy Chained	Indicates whether the drive cages are daisy chained.

Viewing Drive Cage Capacity

➡To view drive cage capacity information, select **Capacity** from the filter list.

The capacity summary appears as follows:



Name	State	FC Total (GiB)	FC Free (GiB)	FC Allocated (GiB)	FC Allocated Percentage	SSD Total (GiB)	SSD Free (GiB)	SSD Allocated (GiB)	SSD Allocated Percentage
cage0	● Normal	1,090.000	822.750	267.250	24%	185.000	181.000	4.000	2%
cage1	● Normal	1,090.000	823.000	267.000	24%	--	--	--	--
		2,180.000	1,645.750	534.250	24%	185.000	181.000	4.000	2%

The following information is provided:

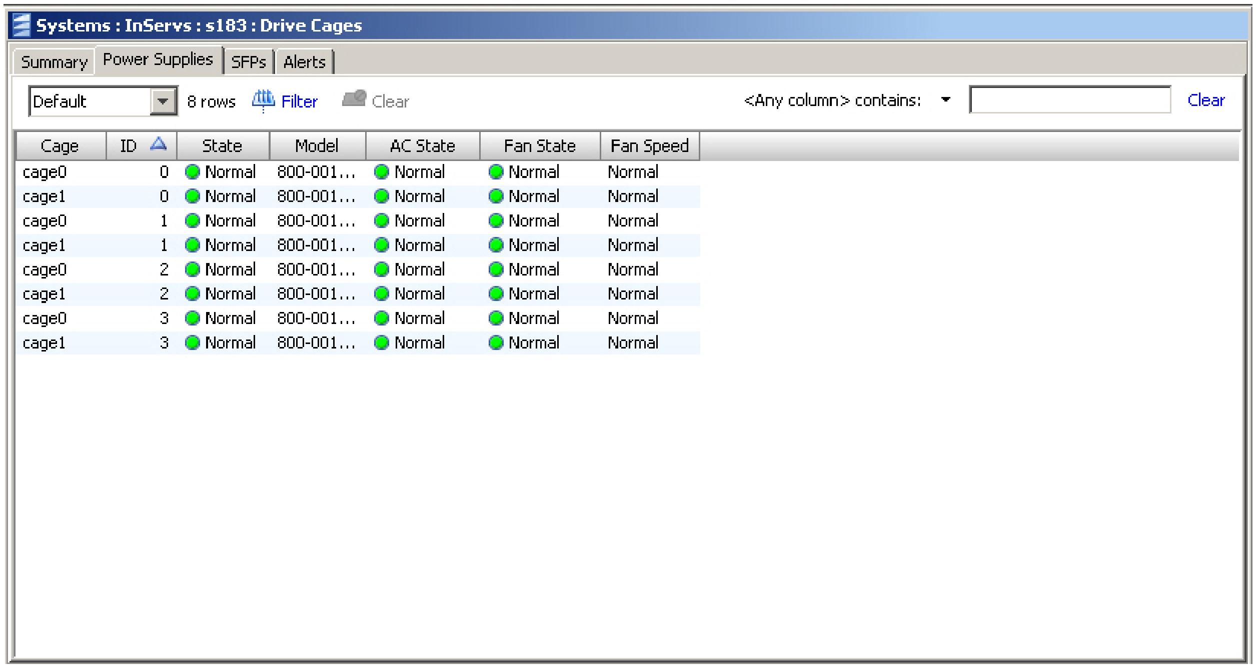
Column	Description
Name	The drive cage name.
State	The drive cage state. See System and Component Status Icons.
FC Total	The total Fibre Channel capacity in GiB. The bottom of the **FC Total** column displays total FC capacity.
FC Free	The amount of free Fibre Channel space in GiB. The bottom of the **FC Free** column displays total free FC capacity.
FC Allocated	The amount of allocated Fibre Channel space in GiB. The bottom of the **FC Allocated** column displays total allocated FC capacity.
FC Allocated Percentage	The percentage of used Fibre Channel capacity. The bottom of the **FC Allocated Percentage** column displays the total used percentage.
SSD Total	The total SSD capacity in GiB. The bottom of the **SSD Total** column displays total SSD capacity.
SSD Free	The amount of free SSD space in GiB. The bottom of the **SSD Free** column displays total free SSD capacity.
SSD Allocated	The amount of allocated SSD space in GiB. The bottom of the **SSD Allocated** column displays total allocated SSD capacity.
SSD Allocated Percentage	The percentage of used SSD capacity. The bottom of the **SSD Allocated Percentage** column displays the total used percentage.
Note: The device types displayed in the summary are dependent on the devices installed in your system. For example, if you have Near Line and disk drives installed, the summary will display **NL** (Near Line) **Total**, **NL Allocated Percentage**, etc. columns.	

Viewing Drive Cage Power Supplies

To view the Drive Cage power supply information:

1. Access the **Drive Cages** screen.
2. In the upper pane, click the **Power Supplies** tab.

The **Power Supplies** tab appears as follows:



Cage	ID	State	Model	AC State	Fan State	Fan Speed
cage0	0	● Normal	800-001...	● Normal	● Normal	Normal
cage1	0	● Normal	800-001...	● Normal	● Normal	Normal
cage0	1	● Normal	800-001...	● Normal	● Normal	Normal
cage1	1	● Normal	800-001...	● Normal	● Normal	Normal
cage0	2	● Normal	800-001...	● Normal	● Normal	Normal
cage1	2	● Normal	800-001...	● Normal	● Normal	Normal
cage0	3	● Normal	800-001...	● Normal	● Normal	Normal
cage1	3	● Normal	800-001...	● Normal	● Normal	Normal

The following information is provided:

Column	**Description**
Cage	The drive cage name.
State	The drive cage state. See System and Component Status Icons.
Model	The drive cage model.
AC State	Indicates the presence of AC power to the power supply. See System and Component Status Icons.
Fan State	Power supply fan operational status. See System and Component Status Icons.
Fan Speed	The fan speed.

See also:

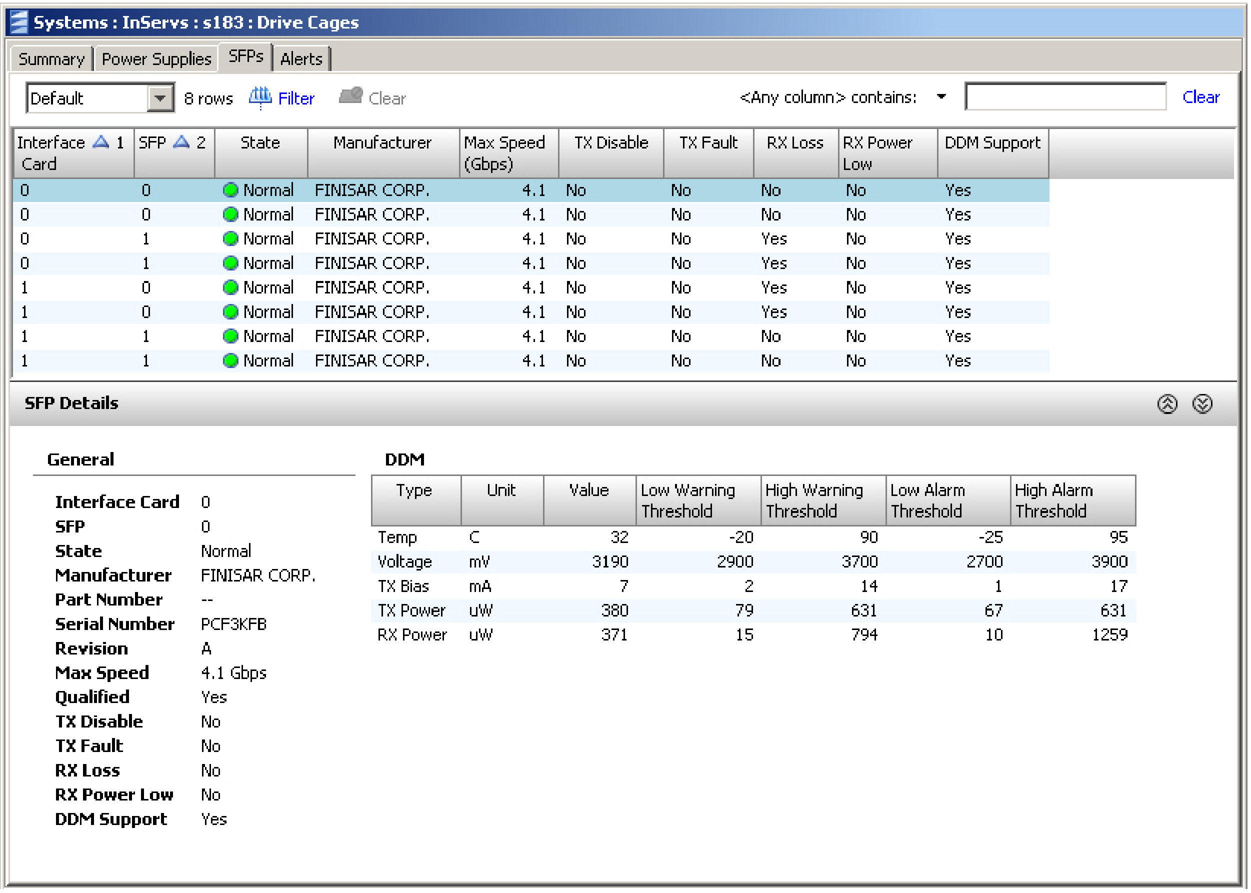
- [Viewing Drive Cages]
- [Viewing the Drive Cage Power Supply Details]

Viewing Drive Cage SFPs

To view the Drive Cage SFP information:

1. Access the **Drive Cages** screen.
2. In the upper pane, click the **SFPs** tab.

The **SFPs** tab appears as follows:



Interface Card ▲ 1	SFP ▲ 2	State	Manufacturer	Max Speed (Gbps)	TX Disable	TX Fault	RX Loss	RX Power Low	DDM Support
0	0	● Normal	FINISAR CORP.	4.1	No	No	No	No	Yes
0	0	● Normal	FINISAR CORP.	4.1	No	No	No	No	Yes
0	1	● Normal	FINISAR CORP.	4.1	No	No	Yes	No	Yes
0	1	● Normal	FINISAR CORP.	4.1	No	No	Yes	No	Yes
1	0	● Normal	FINISAR CORP.	4.1	No	No	Yes	No	Yes
1	0	● Normal	FINISAR CORP.	4.1	No	No	Yes	No	Yes
1	1	● Normal	FINISAR CORP.	4.1	No	No	No	No	Yes
1	1	● Normal	FINISAR CORP.	4.1	No	No	No	No	Yes

General

Interface Card	0
SFP	0
State	Normal
Manufacturer	FINISAR CORP.
Part Number	--
Serial Number	PCF3KFB
Revision	A
Max Speed	4.1 Gbps
Qualified	Yes
TX Disable	No
TX Fault	No
RX Loss	No
RX Power Low	No
DDM Support	Yes

DDM

Type	Unit	Value	Low Warning Threshold	High Warning Threshold	Low Alarm Threshold	High Alarm Threshold
Temp	C	32	-20	90	-25	95
Voltage	mV	3190	2900	3700	2700	3900
TX Bias	mA	7	2	14	1	17
TX Power	uW	380	79	631	67	631
RX Power	uW	371	15	794	10	1259

The upper half of the **SFPs** tab displays summary SFP information. The lower half of the **SFPs** tab displays detailed information about a selected SFP from the upper pane.

The following information appears in the upper tab:

Column	Description
Interface Card	Interface card number, as assigned by the system.
SFP	SFP number, as assigned by the system.
State	The drive cage state. See System and Component Status Icons.
Manufacturer	The SFP manufacturer.
Max Speed	The maximum speed of the SFP in Gbps.
TX Disable	Displays whether the transmit laser is disabled.
TX Fault	Displays whether the transmit laser has a problem.
RX Loss	Displays whether the receive end of the SFP is experiencing a loss of signal from the host or drive cage.
RX Power Low	Displays whether the SFP receive power is low.
DDM Support	Displays whether the SFP is DDM-capable (Digital Diagnostic Monitoring).

The following information appears in the lower tab:

Group	Field	Description
General	**Interface Card**	Interface card number, as assigned by the system.
	SFP	SFP number, as assigned by the system.
	State	Current condition of the SFP.
	Manufacturer	Manufacturer of the SFP.
	Part Number	Part number of the SFP.
	Serial Number	Serial number of the SFP.

	Revision	SFP's revision level.
	Max Speed	Maximum speed allowed by the SFP.
	Qualified	Displays whether the SFP has been tested and if the SFP is supported.
	TX Disable	Displays whether the transmit laser is disabled.
	TX Fault	Displays whether the transmit laser has a problem.
	RX Loss	Displays whether the receive end of the SFP is experiencing a loss of signal from the host or drive cage.
	RX Power Low	Displays whether the SFP receive power is low.
	DDM Support	Displays whether the SFP is DDM-capable (Digital Diagnostic Monitoring).
	Column	**Description**
DDM	**Type**	Identifies the monitored parameters (temperature, voltage, TX bias, TX power, and RX power).
	Unit	The unit of measure used for the monitored parameters.
	Value	The current measured value.
	Low Threshold Warning	The manufacturer's recommended lower-limit warning level.
	High Threshold Warning	The manufacturer's recommended upper-limit warning level.
	Low Alarm Threshold	The manufacturer's recommended lower-limit alarm level.
	High Alarm Threshold	The manufacturer's recommended upper-limit alarm level.

See also:

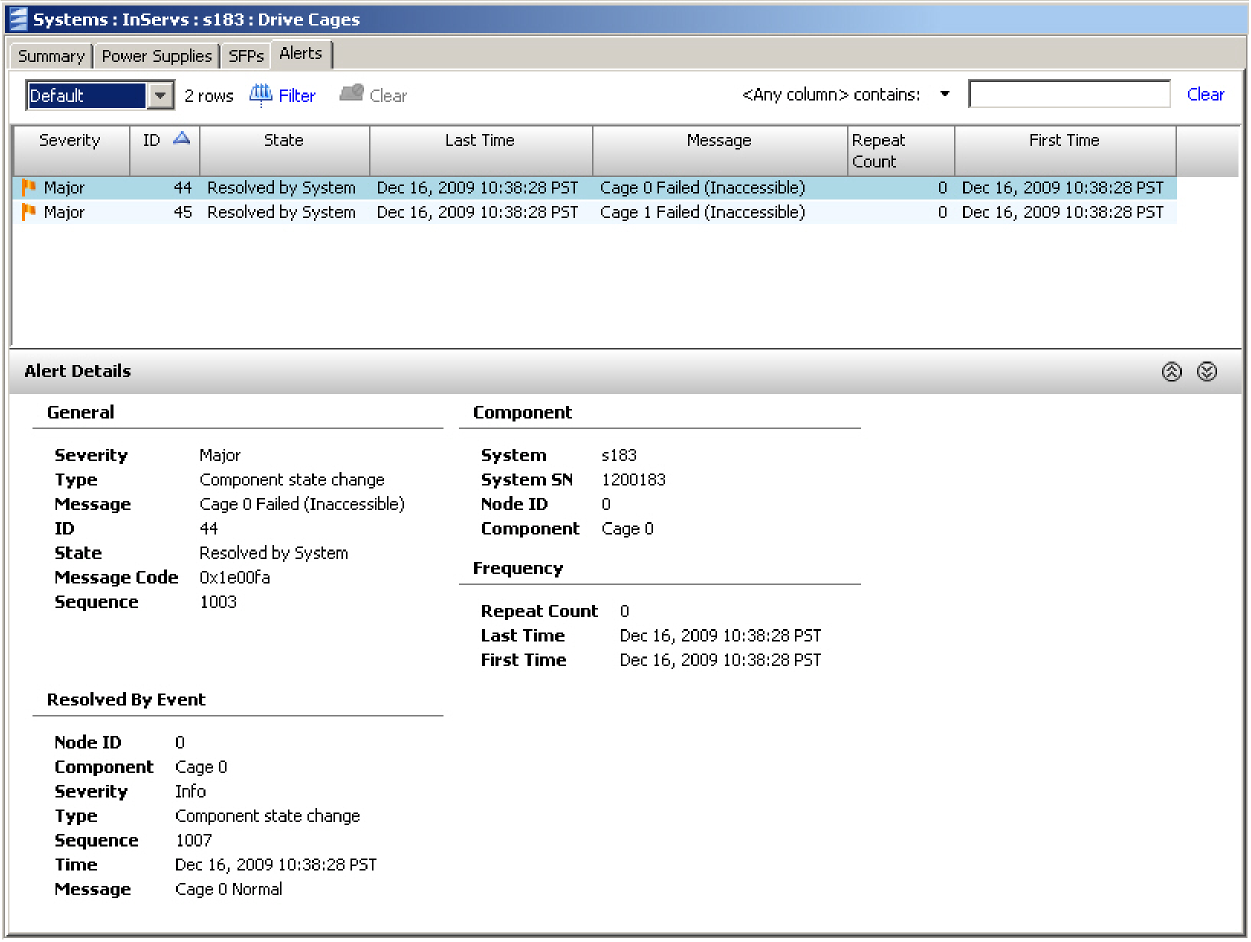
Viewing Drive Cages

Viewing Drive Cage Alerts

To view the Drive Cage alerts:

1. Access the **Drive Cages** screen.
2. In the upper pane, click the **Alerts** tab.

The **Alerts** tab appears as follows:



Severity	ID	State	Last Time	Message	Repeat Count	First Time
Major	44	Resolved by System	Dec 16, 2009 10:38:28 PST	Cage 0 Failed (Inaccessible)	0	Dec 16, 2009 10:38:28 PST
Major	45	Resolved by System	Dec 16, 2009 10:38:28 PST	Cage 1 Failed (Inaccessible)	0	Dec 16, 2009 10:38:28 PST

General

Severity	Major
Type	Component state change
Message	Cage 0 Failed (Inaccessible)
ID	44
State	Resolved by System
Message Code	0x1e00fa
Sequence	1003

Component

System	s183
System SN	1200183
Node ID	0
Component	Cage 0

Frequency

Repeat Count	0
Last Time	Dec 16, 2009 10:38:28 PST
First Time	Dec 16, 2009 10:38:28 PST

Resolved By Event

Node ID	0
Component	Cage 0
Severity	Info
Type	Component state change
Sequence	1007
Time	Dec 16, 2009 10:38:28 PST
Message	Cage 0 Normal

The upper half of the **Alerts** tab displays summary alert information. The lower half of the **Alerts** tab displays detailed information about a selected alert from the upper pane.

The information displayed in the **Alerts** tab is identical to the information displayed in the Systems Alerts screen, except the Drive Cage Alerts tab does not display a **Systems** column. See Viewing System Alerts for details.

See also:

- Viewing Drive Cages
- Viewing System Alerts

Viewing Drive Cage Details

The Drive Cage detail screens display details about a specific drive cage selected from the Drive Cage Summary tab.

➜To view drive cage details, access the **Drive Cages** screen.

Drive cage details are displayed on six tabs in the lower pane of the **Drive Cages** screen. For information about each, see:

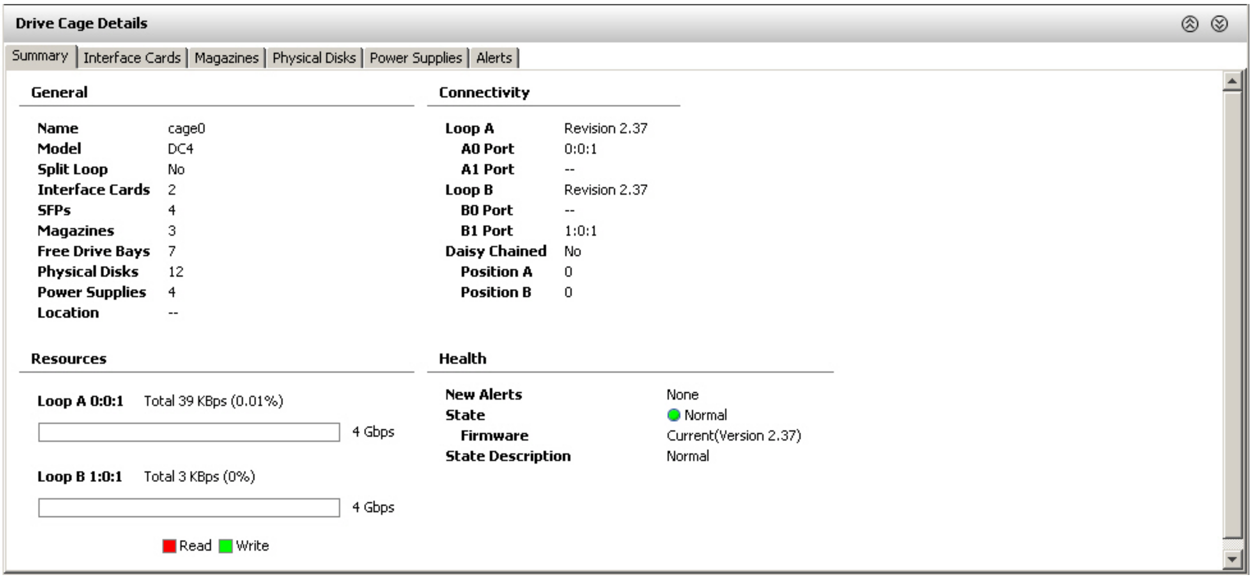
- Viewing the Drive Cage Details Summary Tab
- Viewing the Drive Cage Interface Card Details
- Viewing the Drive Cage Magazine Details
- Viewing the Drive Cage Physical Disks Details
- Viewing the Drive Cage Power Supply Details

Viewing the Drive Cage Details Summary Tab

The Drive Cage details **Summary** tab displays detailed information about a drive cage selected from the **Summary** tab in the upper pane of the Drive Cages screen.

1. To view drive cage details, access the **Drive Cages** screen.
2. In the upper pane of the **Drive Cages** screen, click the **Summary** tab and then click a drive cage.
3. In the lower pane, click the **Summary** tab.

The details **Summary** tab appears as follows:



General

Name	cage0
Model	DC4
Split Loop	No
Interface Cards	2
SFPs	4
Magazines	3
Free Drive Bays	7
Physical Disks	12
Power Supplies	4
Location	--

Connectivity

Loop A	Revision 2.37
A0 Port	0:0:1
A1 Port	--
Loop B	Revision 2.37
B0 Port	--
B1 Port	1:0:1
Daisy Chained	No
Position A	0
Position B	0

Resources

Loop A 0:0:1 Total 39 KBps (0.01%) 4 Gbps

Loop B 1:0:1 Total 3 KBps (0%) 4 Gbps

🟥 Read 🟩 Write

Health

New Alerts	None
State	● Normal
Firmware	Current(Version 2.37)
State Description	Normal

The following information is provided:

Group	Field	Description
General	**Name**	The drive cage name.
	Model	The drive cage model.
	Node WWN (for DC1 and DC3 drive cages)	The World-Wide Name of the controller node.
	Serial Number (for DC3 drive cages)	The drive cage serial number.
	Split Loop (for DC2 and DC4 drive cages)	Whether the drive cage is in split loop mode.
	ID Switch (for DC3 drive cages)	The number of ID switches.
	Interface Cards	The number of interface cards.
	SFPs	The number of SFPs.
	Magazines	The number of drive magazines.
	Free Drive Bays	The number of available drive magazine bays.

	Physical Disks	The number of physical disks.
	Power Supplies	The number of power supplies.
	Location	The location of the drive cage.
Resources	**Loop A**	The throughput in KIB/sec for the Loop A port.
	Loop B	The throughput in KIB/sec for the Loop B port.
Connectivity	**Loop A**	Revision of firmware running on the FC-AL for port A.
	A0 Port	Controller node initiator port connected to drive cage port **A0**.
	A1 Port	Controller node initiator port connected to drive cage port **A1**.
	A2 Port (for DC3 drive cages)	Controller node initiator port connected to drive cage port **A2**.
	A3 Port (for DC3 drive cages)	Controller node initiator port connected to drive cage port **A3**.
	Loop B	Revision of firmware running on the FC-AL for port B.
	B0 Port	Controller node initiator port connected to drive cage port **B0**.
	B1 Port	Controller node initiator port connected to drive cage port **B1**.
	B2 Port (for DC3 drive cages)	Controller node initiator port connected to drive cage port **B2**.

	B3 Port (for DC3 drive cages)	Controller node initiator port connected to drive cage port **B3**.
	Daisy Chained	Displays if the selected drive cage is connected to another drive cage, i.e. daisy chained.
	Position A	Distance the drive cage is from the controller node port (**0** = directly connected to InServ ports, **1**= there is one device between the node and this drive cage, etc).
	Position B	Distance the drive cage is from the controller node port (**0** = directly connected to InServ ports, **1**= there is one device between the node and this drive cage, etc).
Health	**New Alerts**	Any alerts.
	State	Current state of the drive cage, either **Normal**, **Degraded**, or **Failed**. See System and Component Status Icons.
	Temperature Sensor Value (for DC3 drive cages)	The temperature value of the drive cage.
	Firmware (for DC2 and DC4 drive cages)	The firmware version on the drive cage.
	State Description	Description of the drive cage state.

See also:

Viewing Drive Cages

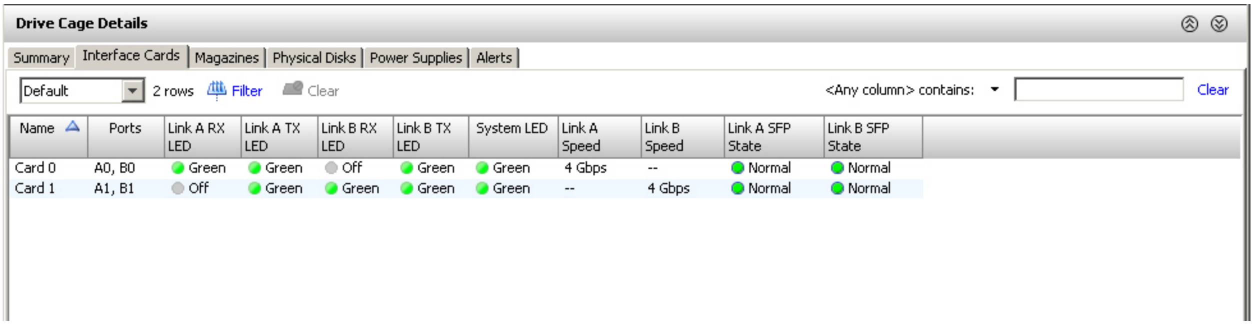
Viewing the Drive Cage Summary

Viewing the Drive Cage Interface Card Details

To view interface card details:

1. Access the **Drive Cages** screen.
2. In the upper pane of the **Drive Cages** screen, click the **Summary** tab and then click a drive cage.
3. In the lower pane, click the **Interface Cards** tab.

The **Interface Cards** tab appears as follows (the following image depicts information for a DC4 drive cage. Your screen may differ depending on the drive cage type in your system):



Name	Ports	Link A RX LED	Link A TX LED	Link B RX LED	Link B TX LED	System LED	Link A Speed	Link B Speed	Link A SFP State	Link B SFP State
Card 0	A0, B0	● Green	● Green	○ Off	● Green	● Green	4 Gbps	--	● Normal	● Normal
Card 1	A1, B1	○ Off	● Green	● Green	● Green	● Green	--	4 Gbps	● Normal	● Normal

The following information for DC2 and DC4 drive cages is provided:

Column	Description
Name	The interface card name.
Ports	Four ports for each FC-AL. For FC-AL A, that is A0 through A3, and for FC-AL B, that is B0 through B3.
Link A RX LED	The status of Link A's fibre channel receiver of the SFP. Green if receiving signal; off if not receiving signal.
Link A TX LED	The status of Link A's SFP transmitter. Green if sending signal; off if not sending signal.
Link B RX LED	The status of Link B's fibre channel receiver of the SFP. Green if receiving signal; off if not receiving signal.
Link B TX LED	The status of Link B's SFP transmitter. Green if sending signal; off if not sending signal.
System LED	The system status.
Link A Speed	Link A speed.

Link B Speed	Link B speed.
Link A SFP State	The state of Link A's SFP.
Link B SFP State	The state of Link B's SFP.

The following information for DC3 drive cages is provided:

Column	Description
Name	The interface card name.
Ports	Four ports for each FC-AL. For FC-AL A, that is A0 through A3, and for FC-AL B, that is B0 through B3.
Port 0 State	Current state of port 0.
Port 1 State	Current state of port 1.
Port 2 State	Current state of port 2.
Port 3 State	Current state of port 3.
Port 0 Link Speed	Link speed for port 0.
Port 1 Link Speed	Link speed for port 1.
Port 2 Link Speed	Link speed for port 2.
Port 3 Link Speed	Link speed for port 3.
Firmware State	Drive cage firmware status (**Current**, **Not Current**, **Unknown**).
State	Current state of the interface card.
ESH State	The current state of the Enhanced Switch Hub.

The following information for DC1 drive cages is provided:

Column	Description
Name	The interface card name.
Ports	Ports for each FC-AL. For FC-AL A, that is A0 and A1, and for FC-AL B, that is B0 and B1.
Loop LED (Port 0)	Current state of port 0.
Loop LED (Port 1)	Current state of port 1.
Loop Split	Current state of daisy-chained drive cages (**Unknown**, **Normal**, **Off**, **Green**, **Green** blink, **Amber**, **Amber** blink).
Status LED	Current state of interface card.
Link Speed	Link speed.
Firmware State	Drive cage firmware status (**Current**, **Not Current**, **Unknown**).
CPU State (Self)	Current state of the current loop's CPU (**Unknown**, **Normal**, **Failed**, **Degraded**).
CPU State (Partner)	Current state of other loop's CPU (**Unknown**, **Normal**, **Failed**, **Degraded**).

See also:

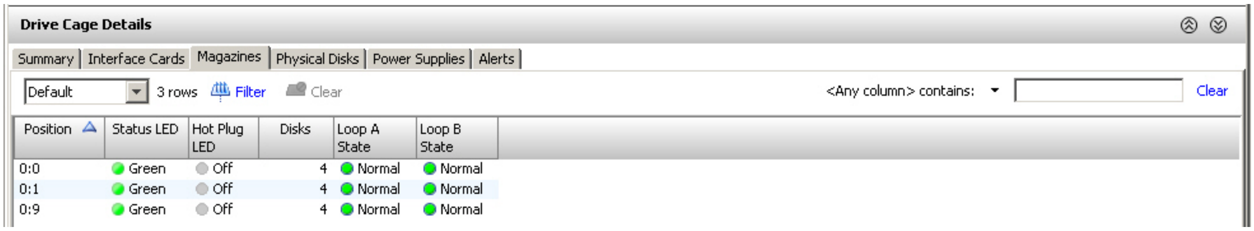
- Viewing Drive Cages
- Viewing the Drive Cage Summary
- System and Component Status Icons

Viewing the Drive Cage Magazine Details

To view drive magazine details:

1. Access the **Drive Cages** screen.
2. In the upper pane of the **Drive Cages** screen, click the **Summary** tab and then click a drive cage.
3. In the lower pane, click the **Magazines** tab.

The **Magazines** tab appears as follows:


Drive Cage Details
Summary
Interface Cards
Magazines
Physical Disks
Power Supplies
Alerts
Default
3 rows
Filter
Clear
<Any column> contains:
Clear

Position	Status LED	Hot Plug LED	Disks	Loop A State	Loop B State
0:0	● Green	● Off	4	● Normal	● Normal
0:1	● Green	● Off	4	● Normal	● Normal
0:9	● Green	● Off	4	● Normal	● Normal

The following information is displayed:

Column	Description
Position	Position of the drive magazine within the drive cage.
Status LED (for DC2 and DC4 drive cages)	The current state of the drive magazine. See System and Component Status Icons.
Hot Plug LED (for DC2 and DC4 drive cages)	The current state of the hot plug LED.
Disks	Number of disks in the drive magazine.
Loop A State	Status of the Interface Card loop (A) to the node.
Loop B State	Status of the Interface Card loop (B) to the node.

See also:

Viewing Drive Cages

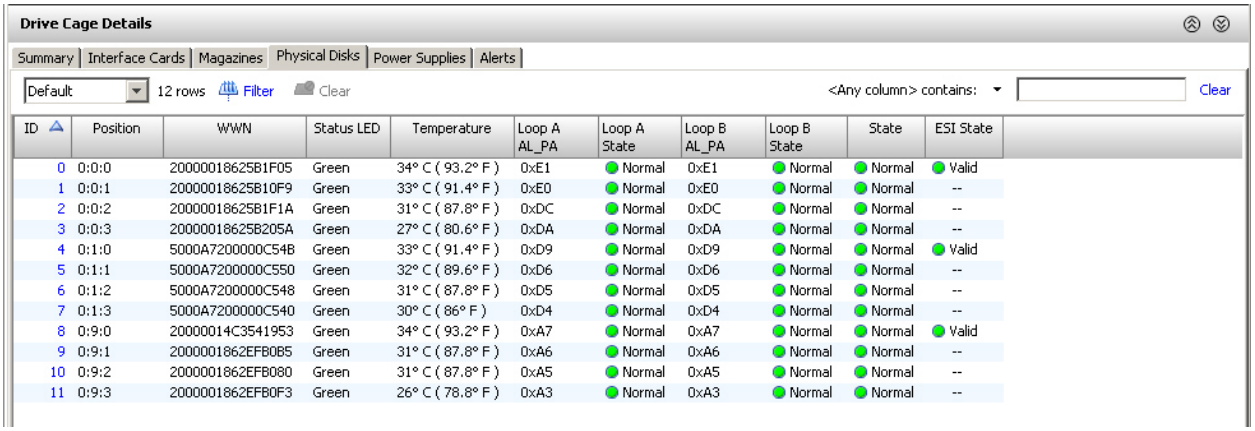
Viewing the Drive Cage Summary

Viewing Drive Cage Physical Disks Details

To view physical disk details:

1. Access the **Drive Cages** screen.
2. In the upper pane of the **Drive Cages** screen, click the **Summary** tab and then click a drive cage.
3. In the lower pane, click the **Physical Disks** tab.

The **Physical Disks** tab appears as follows:



ID	Position	WWN	Status LED	Temperature	Loop A AL_PA	Loop A State	Loop B AL_PA	Loop B State	State	ESI State
0	0:0:0	20000018625B1F05	Green	34° C (93.2° F)	0xE1	● Normal	0xE1	● Normal	● Normal	● Valid
1	0:0:1	20000018625B10F9	Green	33° C (91.4° F)	0xE0	● Normal	0xE0	● Normal	● Normal	--
2	0:0:2	20000018625B1F1A	Green	31° C (87.8° F)	0xDC	● Normal	0xDC	● Normal	● Normal	--
3	0:0:3	20000018625B205A	Green	27° C (80.6° F)	0xDA	● Normal	0xDA	● Normal	● Normal	--
4	0:1:0	5000A7200000C54B	Green	33° C (91.4° F)	0xD9	● Normal	0xD9	● Normal	● Normal	● Valid
5	0:1:1	5000A7200000C550	Green	32° C (89.6° F)	0xD6	● Normal	0xD6	● Normal	● Normal	--
6	0:1:2	5000A7200000C548	Green	31° C (87.8° F)	0xD5	● Normal	0xD5	● Normal	● Normal	--
7	0:1:3	5000A7200000C540	Green	30° C (86° F)	0xD4	● Normal	0xD4	● Normal	● Normal	--
8	0:9:0	20000014C3541953	Green	34° C (93.2° F)	0xA7	● Normal	0xA7	● Normal	● Normal	● Valid
9	0:9:1	2000001862EFB0B5	Green	31° C (87.8° F)	0xA6	● Normal	0xA6	● Normal	● Normal	--
10	0:9:2	2000001862EFB080	Green	31° C (87.8° F)	0xA5	● Normal	0xA5	● Normal	● Normal	--
11	0:9:3	2000001862EFB0F3	Green	26° C (78.8° F)	0xA3	● Normal	0xA3	● Normal	● Normal	--

The following information is provided:

Column	Description
ID	Physical disk ID, as assigned by the system. For unadmitted disks, this columns is blank (--).
Position	Location of the disk in the format: **N**:**S**:**P** (**N**ode:**S**lot:**P**ort).
WWN	The World Wide Name (WWN) assigned to the disk.
Status LED (for DC1, DC2, and DC4 drive cages)	Current state of the disks.
Temperature	Current internal temperature of the disk drive.
Loop A AL_PA	The loop A arbitrated loop physical address of the disk.
Loop A State	Status of the Interface Card loop to the node. See System and Component Status Icons.

Loop B AL_PA	The loop B arbitrated loop physical address of the disk.
Loop B State	Status of the Interface Card loop to the node. See System and Component Status Icons.
State	Status of the physical disk. See System and Component Status Icons.
ESI State (for DC2, DC3, and DC4 drive cages)	State of the ESI (Enclosure Services Interface). See System and Component Status Icons.

See also:

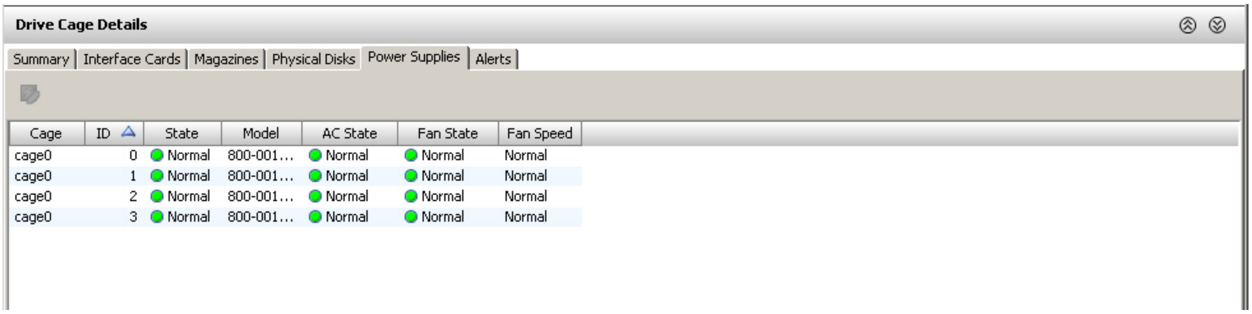
- Viewing Drive Cages
- Viewing the Drive Cage Summary

Viewing Drive Cage Power Supply Details

To view power supply details:

1. Access the **Drive Cages** screen.
2. In the upper pane of the **Drive Cages** screen, click the **Summary** tab and then click a drive cage.
3. In the lower pane, click the **Power Supplies** tab.

The **Power Supplies** tab appears as follows:



Cage	ID	State	Model	AC State	Fan State	Fan Speed
cage0	0	● Normal	800-001...	● Normal	● Normal	Normal
cage0	1	● Normal	800-001...	● Normal	● Normal	Normal
cage0	2	● Normal	800-001...	● Normal	● Normal	Normal
cage0	3	● Normal	800-001...	● Normal	● Normal	Normal

The following information is provided:

Column	Description
Cage	The drive cage to which the power supply belongs.
ID	Numeric ID of the power supply.
State	Status of the physical disk. See System and Component Status Icons.
Model	Model name of the power supply.
AC State	Indicates the presence of AC power to the power supply.
Fan State	Power supply fan operational status.
Fan Speed	Speed of the power supply fan.

See also:

Viewing Drive Cages

Viewing the Drive Cage Summary

Viewing Drive Cage Power Supplies

Editing Drive Cages

To edit a drive cage:

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, click **Drive Cages** under the system whose drive cage you wish to edit.
3. In the **Summary** tab of upper pane displayed in Management Window, right-click the drive cage you wish to edit and click **Edit**.
4. Enter the drive cage location the **Location** field.
5. Click **OK**.

See also:

- Manager Pane
- Management Tree
- Management Window

Locating Drive Cages

This operation locates a drive cage, or components of the drive cage such as drive magazines or ports in the storage server, by setting the related LED(s) to amber or oscillate.

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, click **Drive Cages** under the system whose drive cage you wish to locate.
3. In the **Summary** tab of upper pane displayed in Management Window, right-click the drive cage you wish to locate and click **Locate**.
4. In the **Duration** field, enter a value of **1** to **255** seconds.
5. In the **Target Component** list, select the component you wish to locate.
6. Click **OK**.

See also:

- Manager Pane
- Management Tree
- Management Window

Editing Drive Cage Power Supplies

To edit a drive cage power supply:

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, click **Drive Cages** under the system whose drive cage you wish to edit.
3. In the **Power Supplies** tab displayed in Management Window, right-click the drive cage power supply you wish to edit and click **Edit**.
4. Enter the drive cage power supply model number in the **Model** field.
5. Click **OK**.

See also:

- Manager Pane
- Management Tree
- Management Window

Working with Ports

The InForm Management Console allows you to:

- View System Ports
- Configure Ports
- Clear Port Parameters
- Reset Ports
- Set Ports Offline
- Initialize Ports
- Synchronize Ports with the Name Server
- Issue an LIP Command
- Enable a Remote Copy Interface
- Ping a Port

Viewing System Ports

The system **Ports** screen provides information about all system ports.

To access the system **Ports** screen:

1. Click **Systems** in the Manager Pane.
2. In the Management Tree, select **Ports** under the system whose port information you wish to view.

The system **Ports** screen provides seven tabs, **Summary**, **Fibre Channel**, **RCFC**, **iSCSI**, **RCIP**, **SFPs**, and **Alerts**. For information about each, see:

- Viewing Port Summary Information
- Viewing System Fibre Channel Ports
- Viewing System RCFC Ports
- Viewing System iSCSI Ports

[Viewing System RCIP Ports](#)

[Viewing SFP Information](#)

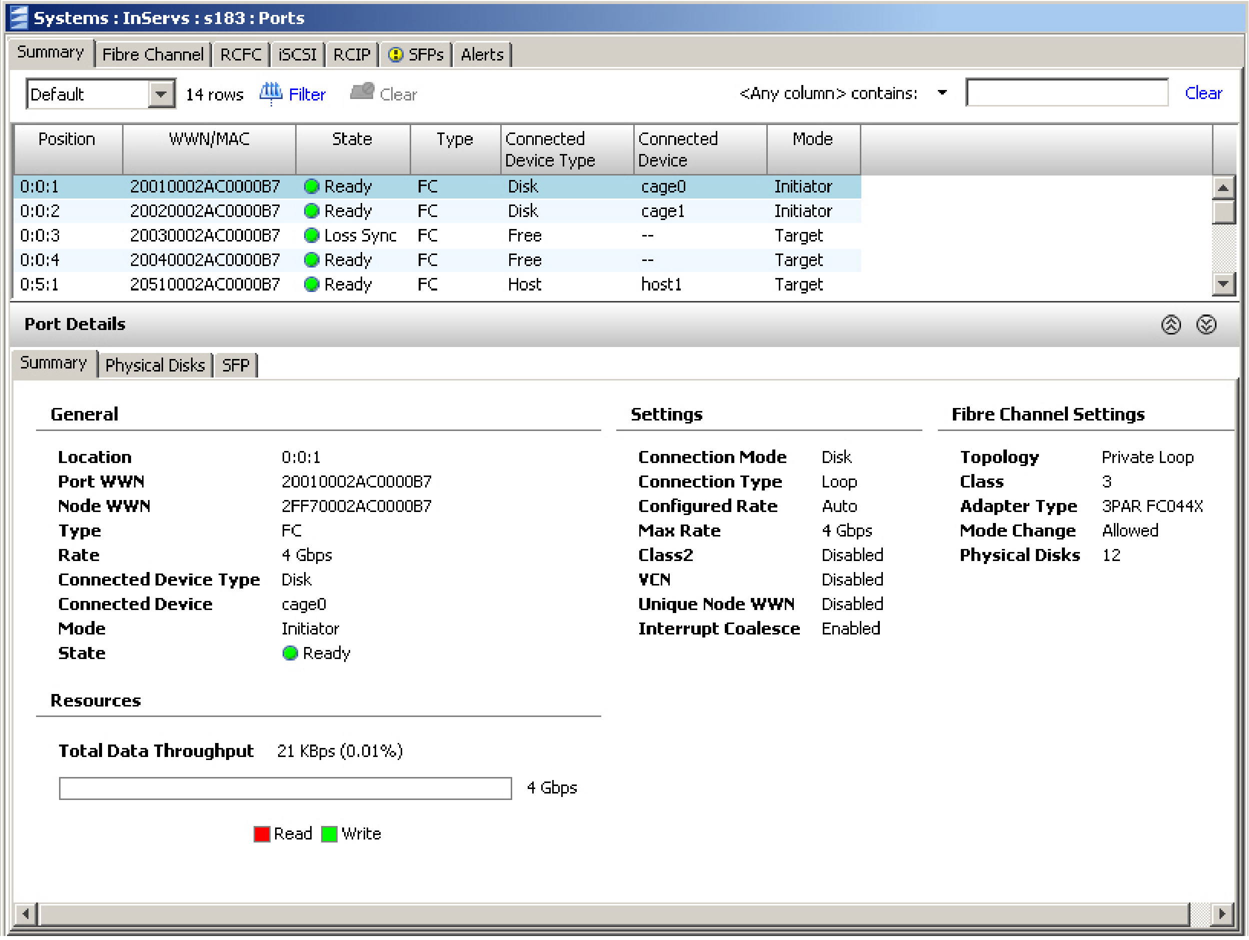
[Viewing System Port Alerts](#)

Viewing Port Summary Information

To view the Port summary information:

1. [Access](#) the **Ports** screen.
2. In the Management Window, click the **Summary** tab.

The **Summary** tab appears as follows:


Systems : InServs : s183 : Ports
Summary
Fibre Channel
RCFC
iSCSI
RCIP
SFPs
Alerts
Default
14 rows
Filter
Clear
<Any column> contains:
Clear
Port Details
Summary
Physical Disks
SFP

Position	WWN/MAC	State	Type	Connected Device Type	Connected Device	Mode
0:0:1	20010002AC0000B7	● Ready	FC	Disk	cage0	Initiator
0:0:2	20020002AC0000B7	● Ready	FC	Disk	cage1	Initiator
0:0:3	20030002AC0000B7	● Loss Sync	FC	Free	--	Target
0:0:4	20040002AC0000B7	● Ready	FC	Free	--	Target
0:5:1	20510002AC0000B7	● Ready	FC	Host	host1	Target

General

Location	0:0:1
Port WWN	20010002AC0000B7
Node WWN	2FF70002AC0000B7
Type	FC
Rate	4 Gbps
Connected Device Type	Disk
Connected Device	cage0
Mode	Initiator
State	● Ready

Settings

Connection Mode	Disk
Connection Type	Loop
Configured Rate	Auto
Max Rate	4 Gbps
Class2	Disabled
VCN	Disabled
Unique Node WWN	Disabled
Interrupt Coalesce	Enabled

Fibre Channel Settings

Topology	Private Loop
Class	3
Adapter Type	3PAR FC044X
Mode Change	Allowed
Physical Disks	12

Resources

Total Data Throughput 21 KBps (0.01%)

4 Gbps

🟥 Read 🟩 Write

The **Summary** tab is divided into an upper pane and a lower pane. The upper pane displays a summary of all system ports. The lower pane displays detailed information about a single port selected from the upper pane.

Upper Pane

Lower Pane

Upper Pane

The upper pane provides the following information:

Column	Description
Position	Port location.
WWN/MAC	World Wide Name or Media Access Control address of the connected device.
State	The state of the port. See System and Component Status Icons.
Type	Indicates whether the port is **FC**, **iSCSI**, **RCIP**, or **RCFC**.
Connected Device Type	Type of device that the port is connected to. **Free**, **Disk**, **Host**, or **InServ**.
Connected Device	Name of device that the port is connected to, e.g. host1, cage0.
Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.

Lower Pane

The lower pane provides detail information about a selected port from the upper pane. Information is presented on up to four tabs, which includes a **Summary** tab, and, depending on your system setup, **Physical Disks**, **SFP**, **Sessions**, or **Hosts**. Each are discussed in detail in the following:

Port_Details_Summary

Physical_Disks

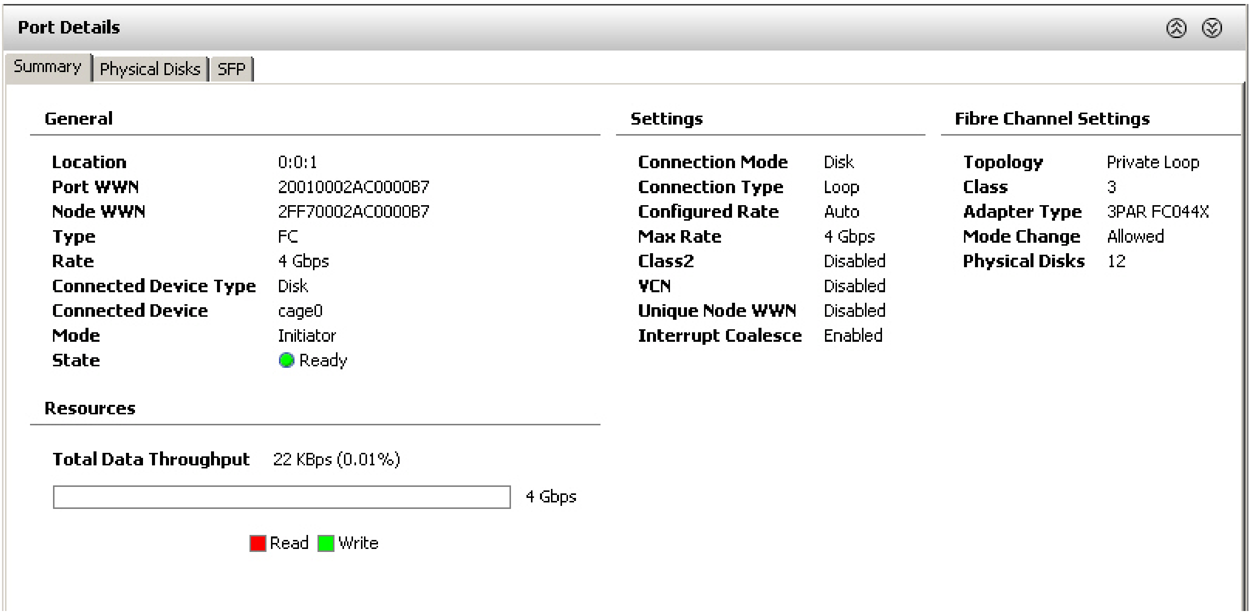
SFP

Sessions

Hosts

Port Details Summary

The port details summary is presented on the **Summary** tab.



General

Location	0:0:1
Port WWN	20010002AC0000B7
Node WWN	2FF70002AC0000B7
Type	FC
Rate	4 Gbps
Connected Device Type	Disk
Connected Device	cage0
Mode	Initiator
State	● Ready

Settings

Connection Mode	Disk
Connection Type	Loop
Configured Rate	Auto
Max Rate	4 Gbps
Class2	Disabled
VCN	Disabled
Unique Node WWN	Disabled
Interrupt Coalesce	Enabled

Fibre Channel Settings

Topology	Private Loop
Class	3
Adapter Type	3PAR FC044X
Mode Change	Allowed
Physical Disks	12

Resources

Total Data Throughput 22 KBps (0.01%)

4 Gbps

🟥 Read 🟩 Write

The **Summary** tab provides the following information:

Group	Field	Description
General	**Location**	Port location.
	Position (not shown)	For iSCSI ports. Port location.
	Port WWN	Port World Wide Name.
	Node WWN	Node World Wide Name.
	Type	Indicates whether the port is **FC**, **iSCSI**, **RCIP**, or **RCFC**.
	Rate	Rate that data can be transferred over the port (**1 Gbps**, **2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.
	Connected Device Type	Type of device that the port is connected to. **Free**, **Disk**, **Host**, or **InServ**.
	Connected Device	Name of device that the port is connected to, e.g. host1, cage0.
	Mode	Port firmware mode setting. Ports in **Initiator** mode

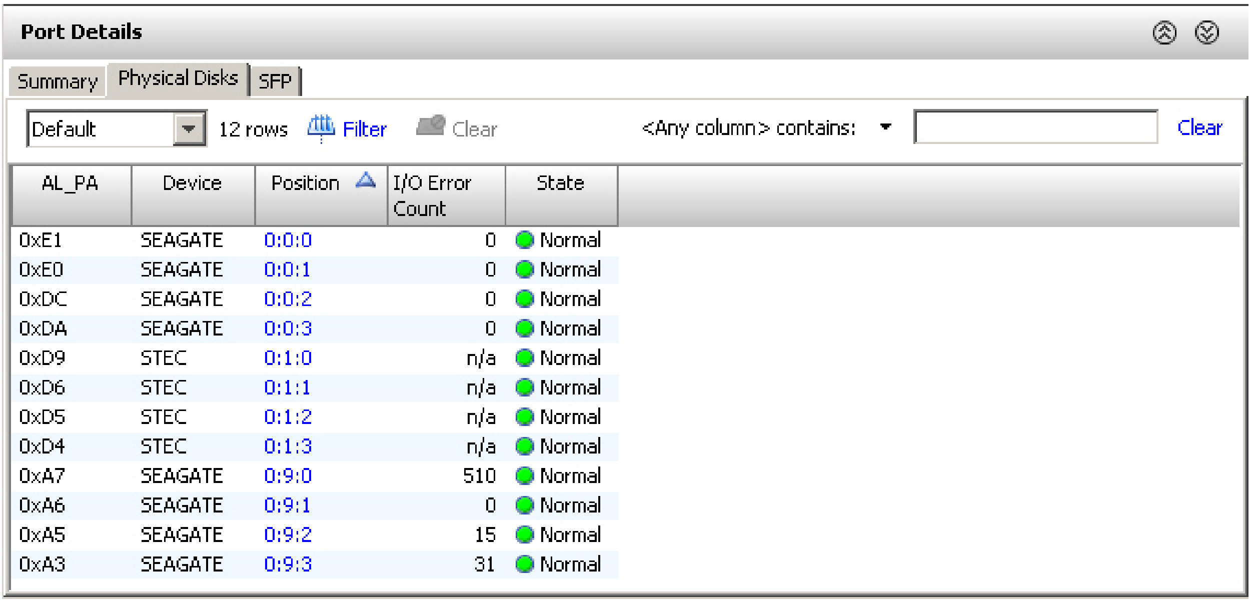
		are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.
	State	Current state of the port.
	MAC (not shown)	For iSCSI ports. The Media Access Control address for the Ethernet interface.
	TPGT (not shown)	For iSCSI ports. The Target Portal Group Tag for the iSCSI target portal group.
Resources	**Total Data Throughput**	The throughput in KIB/sec.
Settings (displayed for FC and RCFC ports)	**Connection Mode**	The type of port connection.
	Connection Type	Connection type or port connection setting (**Loop**, **Point**, or **Loop-point**). When the port is set to **Loop-point**, both loop and point-to-point connections are enabled.
	Configured Rate	Data transfer rate setting (for example, **1 Gbps**). **Auto** indicates that the system automatically selects the rate.
	Max Rate	Maximum rate of connection from the port.
	Class 2	Indicates whether Fibre Channel service Class 2 is **Disabled**, **Ack 1** or **Ack 0**.
	VCN	For fabric attached ports, indicates the *VLUN change notification* setting. When set to **Enabled**, notices are generated and sent to the fabric controller. When set to **Disabled**, no notification is sent.
	Unique Node WWN	Indicates whether the node's WWN is **Enabled** or **Disabled**.
	Interrupt Coalesce	If **Disabled**, each I/O generates a separate interrupt to the HBA port driver rather than generating one interrupt for multiple I/O completion.
IP Settings (displayed for RCIP and iSCI	**MAC**	For RCIP ports. Media Access Control address of the Ethernet interface.

ports - not shown)	**DHCP**	For iSCSI ports. Indicates if the Dynamic Host Configuration Protocol (DHCP) protocol is enabled.
	IP Address	IP address of the iSCSI or RCIP port.
	Gateway	The address of a local IP router on the same network as the InServ, used to forward traffic to destinations beyond the local network.
	Subnet Mask	Netmask address for the iSCSI or RCIP interface.
	MTU	Maximum Transmission Unit. The greatest amount of data or "packet" size that can be transferred in one physical frame on a network. MTU setting for the iSCSI port. The default setting is 1500. When supported by the network, an MTU value of 9000 should be used.
	Configured Rate	For RCIP ports. The configured data transfer rate. A value of 0 indicates that no data is being transferred.
	Rate	For iSCSI ports. Data transfer rate. A value of 0 indicates that no data is being transferred.
	TCP Port	The TCP port number used by the iSCSI card.
	Duplex	(For RCIP) The duplex speed, **Half** or **Full**.
	Adapter Type	For RCIP ports. Model of the adapter that contains the port (for example, **Intel PRO/1000MT**).
Fibre Channel Settings (displayed for FC and RCFC ports)	**Topology**	Type of connection (**Private Loop**, **Public Loop**, or **Point-Point**).
	Class	Identifies which Fibre Channel classes of service are enabled (**2**, **3**, or **2/3**). **2/3** indicates that both Class 2 and Class 3 are enabled.
	Adaptor Type	Model of the Fibre Channel adapter that contains the port (for example, **QLOGIC 2302**).

	Mode Change	Indicates whether port mode change from initiator to target or vice versa is **Allowed** or **Prohibited**. This setting is configured using the InForm CLI command **controlport**.
	Hosts	The number of hosts connected to the port. This is only displayed if the port is connected to hosts.
	Physical Disks	The number of physical disks connected to the port. This is only displayed if the port is connected to drive cages.
	Link State	The current state of the link. Displayed if the port is an RCFC port.
	Remote Node WWN	The node WWN. Displayed if the port is an RCFC port.
	Remote Port WWN	The port WWN. Displayed if the port is an RCFC port.
iSNS Settings (displayed for iSCSI ports - not shown)	**Primary IP Address**	Primary Internet Storage Name Service (iSNS) server IP address. iSNS protocol allows for automated discovery, management, and configuration of iSCSI.
	Secondary IP Address	Secondary iSNS server IP address.
	TCP Port	The port on the iSNS server with which to communicate.

Physical Disks

The physical disk port information is presented on the **Physical Disks** tab.



AL_PA	Device	Position	I/O Error Count	State
0xE1	SEAGATE	0:0:0	0	● Normal
0xE0	SEAGATE	0:0:1	0	● Normal
0xDC	SEAGATE	0:0:2	0	● Normal
0xDA	SEAGATE	0:0:3	0	● Normal
0xD9	STEC	0:1:0	n/a	● Normal
0xD6	STEC	0:1:1	n/a	● Normal
0xD5	STEC	0:1:2	n/a	● Normal
0xD4	STEC	0:1:3	n/a	● Normal
0xA7	SEAGATE	0:9:0	510	● Normal
0xA6	SEAGATE	0:9:1	0	● Normal
0xA5	SEAGATE	0:9:2	15	● Normal
0xA3	SEAGATE	0:9:3	31	● Normal

The following information is provided:

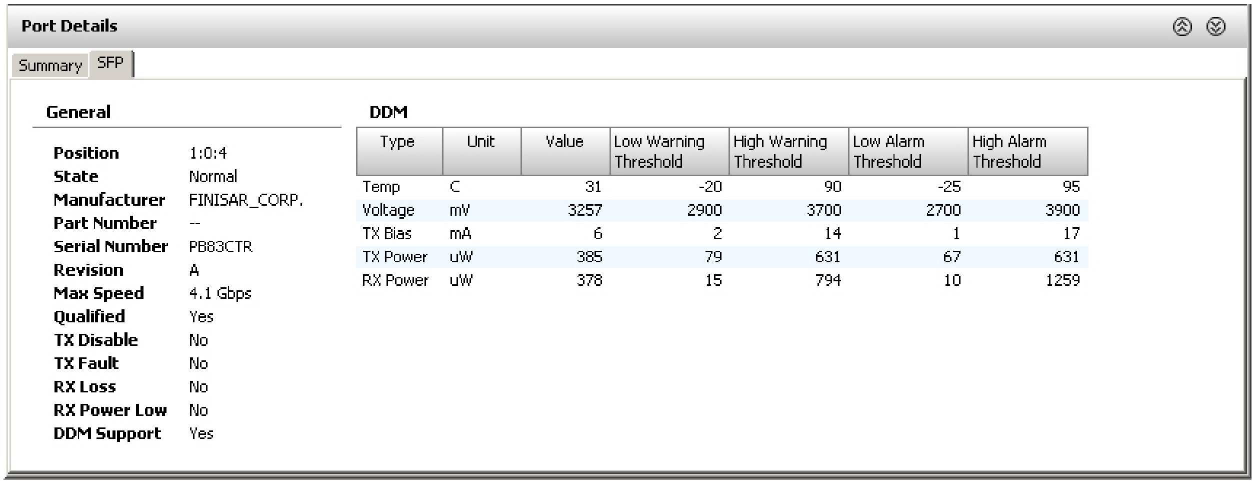
Column	Description
AL_PA	The arbitrated loop physical address of the device.
Device	The type of connected disk.
Position	The position of the disk in the InServ Storage Server.
I/O Error Count	The number of errors on the connected disk.
State	The state of the disk. See System and Component Status Icons.

See also:

Viewing Drive Cages

SFP

The port SFP information is presented on the **SFP** tab.



General

Position	1:0:4
State	Normal
Manufacturer	FINISAR_CORP.
Part Number	--
Serial Number	PB83CTR
Revision	A
Max Speed	4.1 Gbps
Qualified	Yes
TX Disable	No
TX Fault	No
RX Loss	No
RX Power Low	No
DDM Support	Yes

DDM

Type	Unit	Value	Low Warning Threshold	High Warning Threshold	Low Alarm Threshold	High Alarm Threshold
Temp	C	31	-20	90	-25	95
Voltage	mV	3257	2900	3700	2700	3900
TX Bias	mA	6	2	14	1	17
TX Power	uW	385	79	631	67	631
RX Power	uW	378	15	794	10	1259

The following information is provided:

Group	Field	Description
General	**Position**	The location of the SFP within the system.
	State	Current condition of the SFP.
	Manufacturer	Manufacturer of the SFP.
	Part Number	Part number of the SFP.
	Serial Number	Serial number of the SFP.
	Revision	SFP's revision level.
	Max Speed	Maximum speed allowed by the SFP.
	Qualified	Displays whether the SFP has been tested and if the SFP is supported.
	TX Disable	Displays whether the transmit laser is disabled.

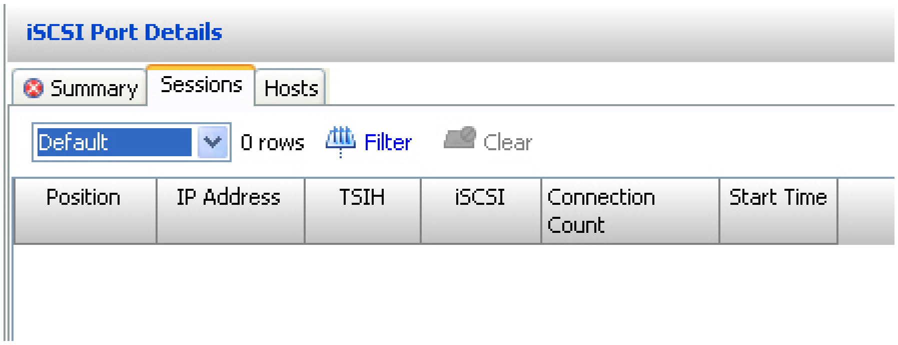
	TX Fault	Displays whether the transmit laser has a problem.
	RX Loss	Displays whether the receive end of the SFP is experiencing a loss of signal from the host or drive cage.
	RX Power Low	Displays whether the SFP receive power is low.
	DDM Support	Displays whether the SFP is DDM-capable (Digital Diagnostic Monitoring).
	Column	**Description**
DDM	**Type**	Identifies the monitored parameters (temperature, voltage, TX bias, TX power, and RX power).
	Unit	The unit of measure used for the monitored parameters.
	Value	The current measured value.
	Low Threshold Warning	The manufacturer's recommended lower-limit warning level.
	High Threshold Warning	The manufacturer's recommended upper-limit warning level.
	Low Alarm Threshold	The manufacturer's recommended lower-limit alarm level.
	High Alarm Threshold	The manufacturer's recommended upper-limit alarm level.

See also:

Viewing Drive Cages

Sessions

For iSCSI ports, session information is displayed on the **Sessions** tab.


iSCSI Port Details
Summary
Sessions
Hosts
Default
0 rows
Filter
Clear
Position
IP Address
TSIH
iSCSI
Connection Count
Start Time

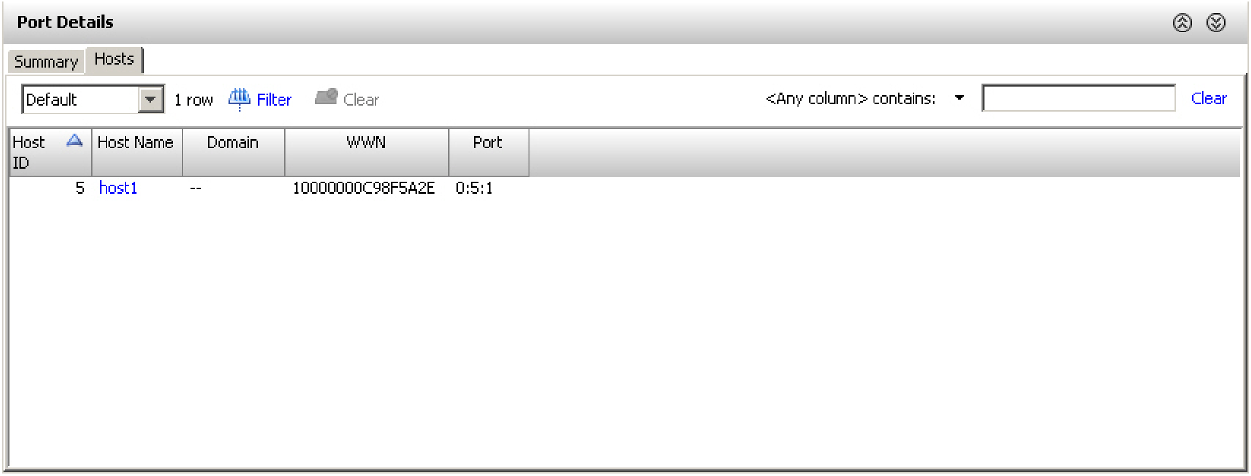
The following information is provided:

Column	Description
Position	Location of the iSCSI port.
IP Address	IP address of the host that initiated the connection.
TSIH	Identifier for the Target Session Identifying Handle (TSIH).
iSCSI	iSCSI name for the associated iSCSI host path.
Connection Count	Number of connections for this session.
Start Time	Time the session started.

Hosts

The host port information is presented on the **Hosts** tab. Information differs for Fibre Channel and iSCSI ports.

For Fibre Channel ports, the following is displayed:

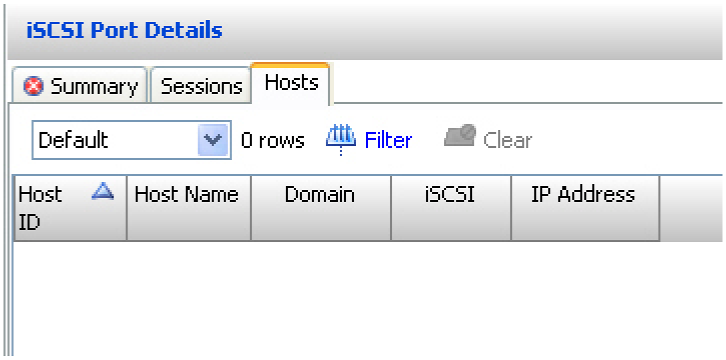

Port Details
Summary
Hosts
Default
1 row
Filter
Clear
<Any column> contains:
Clear

Host ID	Host Name	Domain	WWN	Port
5	host1	--	10000000C98F5A2E	0:5:1

The following information is provided for Fibre Channel ports:

Column	Description
Host ID	The ID of the host.
Host Name	The name of the host.
Domain	The domain in which the host resides.
WWN	The hosts WWN.
Port	The hosts location in N:S:P (Node:Slot:Port) format.

For iSCSI ports, the following is displayed:


iSCSI Port Details
Summary
Sessions
Hosts
Default
0 rows
Filter
Clear
Host ID
Host Name
Domain
iSCSI
IP Address

The following information is provided for iSCSI ports:

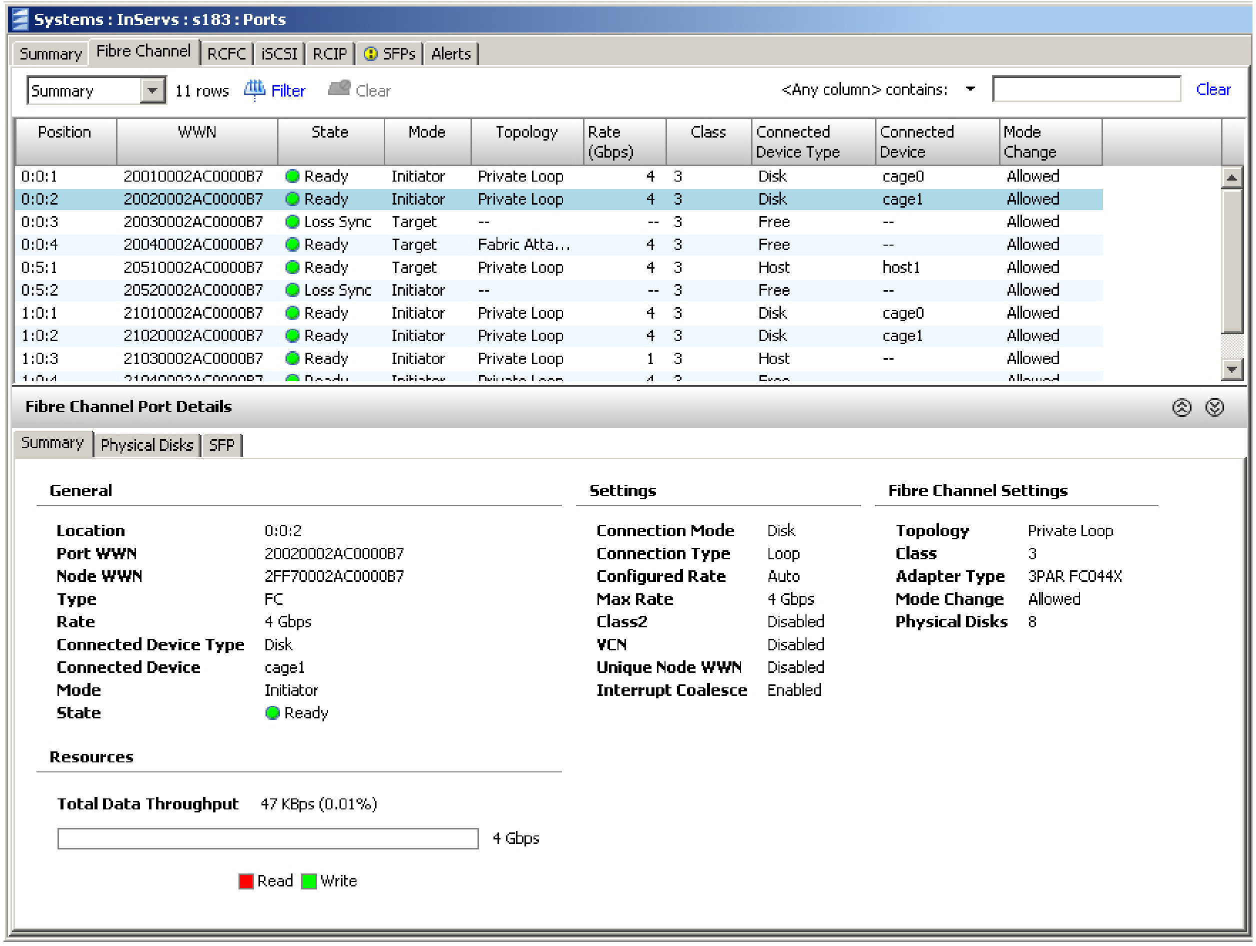
Column	Description
Host ID	The ID of the host.
Host Name	The name of the host.
Domain	The domain in which the host resides.
iSCSI	iSCSI name for the associated iSCSI host path.
IP Address	iSCSI port IP address.

Viewing System Fibre Channel Ports

To view system fibre channel port information:

1. Access the **Ports** screen.
2. In the Management Window, click the **Fibre Channel** tab.

The **Fiber Channel** tab appears as follows:



Position	WWN	State	Mode	Topology	Rate (Gbps)	Class	Connected Device Type	Connected Device	Mode Change
0:0:1	20010002AC0000B7	● Ready	Initiator	Private Loop	4	3	Disk	cage0	Allowed
0:0:2	20020002AC0000B7	● Ready	Initiator	Private Loop	4	3	Disk	cage1	Allowed
0:0:3	20030002AC0000B7	● Loss Sync	Target	--	--	3	Free	--	Allowed
0:0:4	20040002AC0000B7	● Ready	Target	Fabric Atta...	4	3	Free	--	Allowed
0:5:1	20510002AC0000B7	● Ready	Target	Private Loop	4	3	Host	host1	Allowed
0:5:2	20520002AC0000B7	● Loss Sync	Initiator	--	--	3	Free	--	Allowed
1:0:1	21010002AC0000B7	● Ready	Initiator	Private Loop	4	3	Disk	cage0	Allowed
1:0:2	21020002AC0000B7	● Ready	Initiator	Private Loop	4	3	Disk	cage1	Allowed
1:0:3	21030002AC0000B7	● Ready	Initiator	Private Loop	1	3	Host	--	Allowed
1:0:4	21040002AC0000B7	● Ready	Initiator	Private Loop	4	3	Free		Allowed

General

Location	0:0:2
Port WWN	20020002AC0000B7
Node WWN	2FF70002AC0000B7
Type	FC
Rate	4 Gbps
Connected Device Type	Disk
Connected Device	cage1
Mode	Initiator
State	● Ready

Settings

Connection Mode	Disk
Connection Type	Loop
Configured Rate	Auto
Max Rate	4 Gbps
Class2	Disabled
VCN	Disabled
Unique Node WWN	Disabled
Interrupt Coalesce	Enabled

Fibre Channel Settings

Topology	Private Loop
Class	3
Adapter Type	3PAR FC044X
Mode Change	Allowed
Physical Disks	8

Resources

Total Data Throughput 47 KBps (0.01%)

4 Gbps

The **Fibre Channel** tab is divided into an upper pane and a lower pane. The upper pane displays a summary of all fibre channel ports in the system. The lower pane displays detailed information about a single port selected from the upper pane.

Upper_Pane

Lower_Pane

Upper Pane

The upper pane can be filtered to display Fibre Channel **Summary** and **Settings** information.

When **Summary** is selected, the following information is displayed:

Column	Description
Position	The port location in node:slot:port format.
WWN	World Wide Name of the connected device.

State	The state of the port. See System and Component Status Icons.
Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.
Topology	Type of connection (**Private Loop**, **Public Loop**, or **Point-Point**).
Rate	Rate that data can be transferred over the port (**1 Gbps, 2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.
Class	Identifies which Fibre Channel classes of service are enabled (**2**, **3**, or **2 / 3**). **2 / 3** indicates that both Class 2 and Class 3 are enabled.
Connected Device Type	Type of device that the port is connected to. **Free**, **Disk**, **Host**, or **InServ**.
Connected Device	Name of device that the port is connected to, e.g. host1, cage0.
Mode Change	Indicates whether port mode change from initiator to target or vice versa is **Allowed** or **Prohibited**. This setting is configured using the InForm CLI command **controlport**.

When **Settings** is selected, the following information is displayed:

Column	**Description**
Position	The port location in node:slot:port format.
Connection Mode	The type of port connection. **Disk**, **Host**, or **RCFC**.
Connection Type	Type of connection (**Private Loop**, **Public Loop**, or **Point-Point**).
Configured Rate	Data transfer rate setting in Gbps (for example, **1 Gbps**). **Auto** indicates that the system automatically selects the rate.
Max Rate	Maximum rate of connection from the port.
Class 2	Indicates whether Fibre Channel service Class 2 is **Disabled**, **Ack 1** or **Ack 0**.
VCN	For fabric attached ports, indicates the *VLUN change notification* setting. When set to **Enabled**, notices are generated and sent to the fabric controller. When set to **Disabled**, no notification is sent.

Unique Node WWN	Indicates whether the node's WWN is **Enabled** or **Disabled**. Not available for systems running InForm OS 2.2.4 or lower.
Interrupt Coalesce	If **Disabled**, each I/O generates a separate interrupt to the HBA port driver rather than generating one interrupt for multiple I/O completion. Not available for systems running InForm OS 2.2.4 or lower.

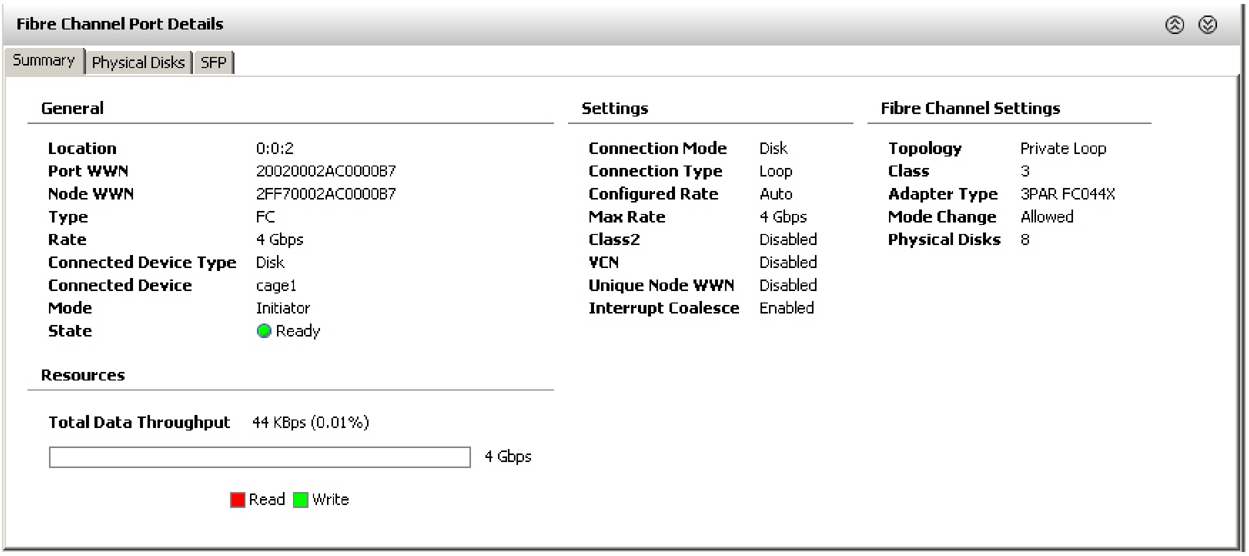
Lower Pane

The lower pane provides detail information about a selected fibre channel port from the upper pane. If the fibre channel port is connected to disks, information is presented on a **Summary** tab, a **Physical Disks** tab, and **SFP** tab. If the fibre channel port is connected to hosts, information is presented on a **Summary** tab, **Hosts** tab, and **SFP** tab. Each are discussed in detail in the following:

- Fibre_Channel_Summary
- Physical_Disks
- SFP
- Hosts

Fibre Channel Summary

The fibre channel summary is displayed on the **Summary** tab.



General

Location	0:0:2
Port WWN	20020002AC0000B7
Node WWN	2FF70002AC0000B7
Type	FC
Rate	4 Gbps
Connected Device Type	Disk
Connected Device	cage1
Mode	Initiator
State	● Ready

Resources

Total Data Throughput	44 KBps (0.01%)

4 Gbps

🟥 Read 🟩 Write

Settings

Connection Mode	Disk
Connection Type	Loop
Configured Rate	Auto
Max Rate	4 Gbps
Class2	Disabled
VCN	Disabled
Unique Node WWN	Disabled
Interrupt Coalesce	Enabled

Fibre Channel Settings

Topology	Private Loop
Class	3
Adapter Type	3PAR FC044X
Mode Change	Allowed
Physical Disks	8

The following information is provided:

Group	Field	Description
General	**Location**	Port location.

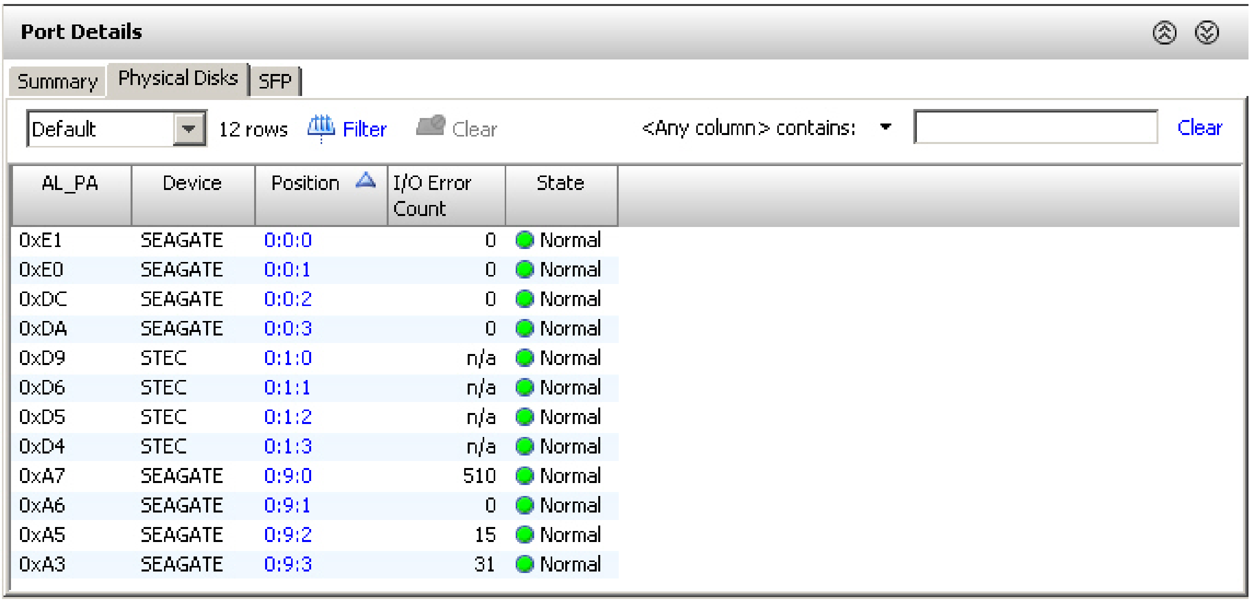
	Port WWN	Port World Wide Name.
	Node WWN	Node World Wide Name.
	Type	Indicates whether the port is **FC**, **iSCSI**, **RCIP**, or **RCFC**.
	Rate	Rate that data can be transferred over the port (**1 Gbps, 2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.
	Connected Device Type	Type of device that the port is connected to. **Free**, **Disk**, **Host**, or **InServ**.
	Connected Device	Name of device that the port is connected to, e.g. host1, cage0.
	Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.
	State	Current state of the port.
Resources	**Total Data Throughput**	The throughput in KIB/sec.
Settings	**Connection Mode**	The type of port connection.
	Connection Type	Connection type or port connection setting (**Loop**, **Point**, or **Loop-point**). When the port is set to **Loop-point**, both loop and point-to-point connections are enabled.
	Configured Rate	Data transfer rate setting (for example, **1 Gbps**). **Auto** indicates that the system automatically selects the rate.
	Max Rate	Maximum rate of connection from the port.
	Class 2	Indicates whether Fibre Channel service Class 2 is **Disabled**, **Ack 1** or **Ack 0**.
	VCN	For fabric attached ports, indicates the *VLUN change notification* setting. When set to **Enabled**, notices are generated and sent to the fabric controller. When set to **Disabled**, no notification is sent.

	Unique Node WWN	Indicates whether the node's WWN is **Enabled** or **Disabled**. Not available for systems running InForm OS 2.2.4 or lower.
	Interrupt Coalesce	If **Disabled**, each I/O generates a separate interrupt to the HBA port driver rather than generating one interrupt for multiple I/O completion. Not available for systems running InForm OS 2.2.4 or lower.
Fibre Channel Settings	**Topology**	Type of connection (**Private Loop**, **Public Loop**, or **Point-Point**).
	Class	Identifies which Fibre Channel classes of service are enabled (**2**, **3**, or **2/3**). **2/3** indicates that both Class 2 and Class 3 are enabled.
	Adaptor Type	Model of the Fibre Channel adapter that contains the port (for example, **QLOGIC 2302**).
	Mode Change	Indicates whether port mode change from initiator to target or vice versa is **Allowed** or **Prohibited**. This setting is configured using the InForm CLI command **controlport**.
	Hosts	The number of hosts connected to the port. This is only displayed if the port is connected to hosts.
	Physical Disks	The number of physical disks connected to the port. This is only displayed if the port is connected to drive cages.
Note: **Persona** information is not displayed on systems using InForm OS 2.3.1 or higher.		
Persona (not shown)	**Persona**	Number for the current port persona setting.
	Vendor	Manufacturer of the host computer's network adapter. This value is determined by the port persona.
	Adapter Type	Host computer's network adapter. This value is determined by the port persona.
	OS	Host computer's operating system. This value is determined by the port persona.

	Connection	Indicates whether the connection is **Direct Connect** or **Fabric Attached**, as determined by the port persona.
	Modified	When a persona has been edited by a user, **Modified** appears in this column. Otherwise, this column remains blank (**--**).

Physical Disks

The physical disk port information is presented on the **Physical Disks** tab.



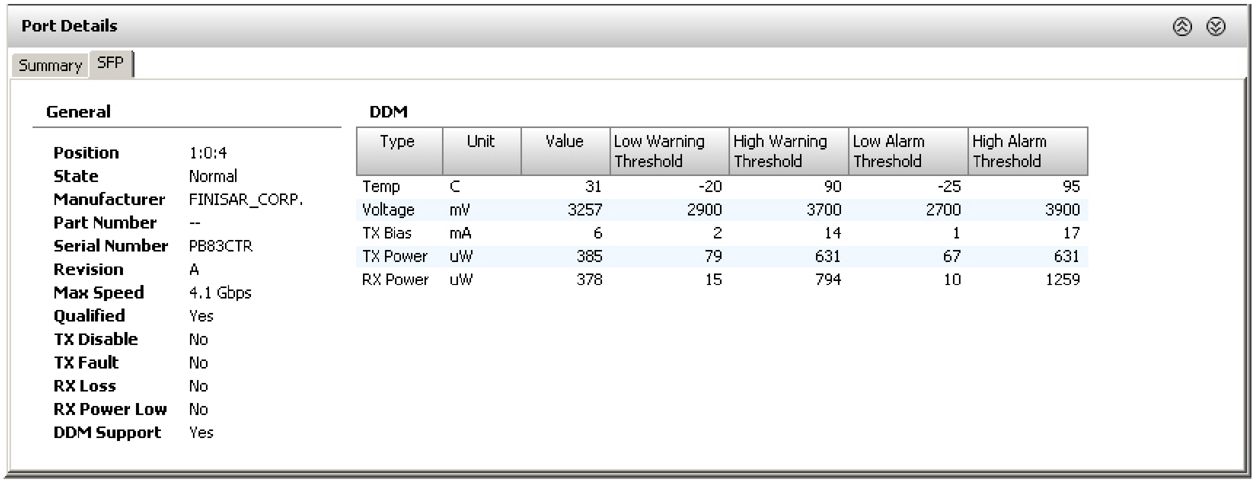
AL_PA	Device	Position	I/O Error Count	State
0xE1	SEAGATE	0:0:0	0	● Normal
0xE0	SEAGATE	0:0:1	0	● Normal
0xDC	SEAGATE	0:0:2	0	● Normal
0xDA	SEAGATE	0:0:3	0	● Normal
0xD9	STEC	0:1:0	n/a	● Normal
0xD6	STEC	0:1:1	n/a	● Normal
0xD5	STEC	0:1:2	n/a	● Normal
0xD4	STEC	0:1:3	n/a	● Normal
0xA7	SEAGATE	0:9:0	510	● Normal
0xA6	SEAGATE	0:9:1	0	● Normal
0xA5	SEAGATE	0:9:2	15	● Normal
0xA3	SEAGATE	0:9:3	31	● Normal

The following information is provided:

Column	Description
AL_PA	The arbitrated loop physical address of the device.
Device	The type of connected disk.
Position	The position of the disk in the InServ Storage Server.
I/O Error Count	The number of errors on the connected disk.
State	The state of the disk. See System and Component Status Icons.

SFP

The fibre channel port SFP information is presented on the **SFP** tab.



General

Position	1:0:4
State	Normal
Manufacturer	FINISAR_CORP.
Part Number	--
Serial Number	PB83CTR
Revision	A
Max Speed	4.1 Gbps
Qualified	Yes
TX Disable	No
TX Fault	No
RX Loss	No
RX Power Low	No
DDM Support	Yes

DDM

Type	Unit	Value	Low Warning Threshold	High Warning Threshold	Low Alarm Threshold	High Alarm Threshold
Temp	C	31	-20	90	-25	95
Voltage	mV	3257	2900	3700	2700	3900
TX Bias	mA	6	2	14	1	17
TX Power	uW	385	79	631	67	631
RX Power	uW	378	15	794	10	1259

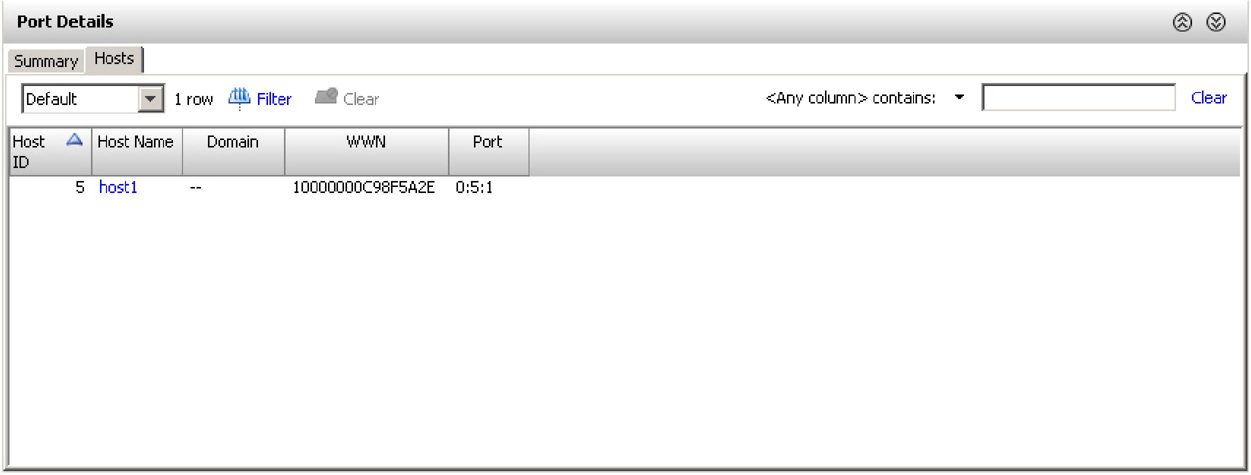
The following information is provided:

Group	Field	Description
General	**Position**	The location of the SFP within the system.
	State	Current condition of the SFP.
	Manufacturer	Manufacturer of the SFP.
	Part Number	Part number of the SFP.
	Serial Number	Serial number of the SFP.
	Revision	SFP's revision level.
	Max Speed	Maximum speed allowed by the SFP.
	Qualified	Displays whether the SFP has been tested and if the SFP is supported.
	TX Disable	Displays whether the transmit laser is disabled.

	TX Fault	Displays whether the transmit laser has a problem.
	RX Loss	Displays whether the receive end of the SFP is experiencing a loss of signal from the host or drive cage.
	RX Power Low	Displays whether the SFP receive power is low.
	DDM Support	Displays whether the SFP is DDM-capable (Digital Diagnostic Monitoring).
	Column	**Description**
DDM	**Type**	Identifies the monitored parameters (temperature, voltage, TX bias, TX power, and RX power).
	Unit	The unit of measure used for the monitored parameters.
	Value	The current measured value.
	Low Threshold Warning	The manufacturer's recommended lower-limit warning level.
	High Threshold Warning	The manufacturer's recommended upper-limit warning level.
	Low Alarm Threshold	The manufacturer's recommended lower-limit alarm level.
	High Alarm Threshold	The manufacturer's recommended upper-limit alarm level.

Hosts

The host port information is presented on the **Hosts** tab.


Port Details
Summary
Hosts
Default
1 row
Filter
Clear
<Any column> contains:
Clear

Host ID	Host Name	Domain	WWN	Port
5	host1	--	10000000C98F5A2E	0:5:1

The following information is provided:

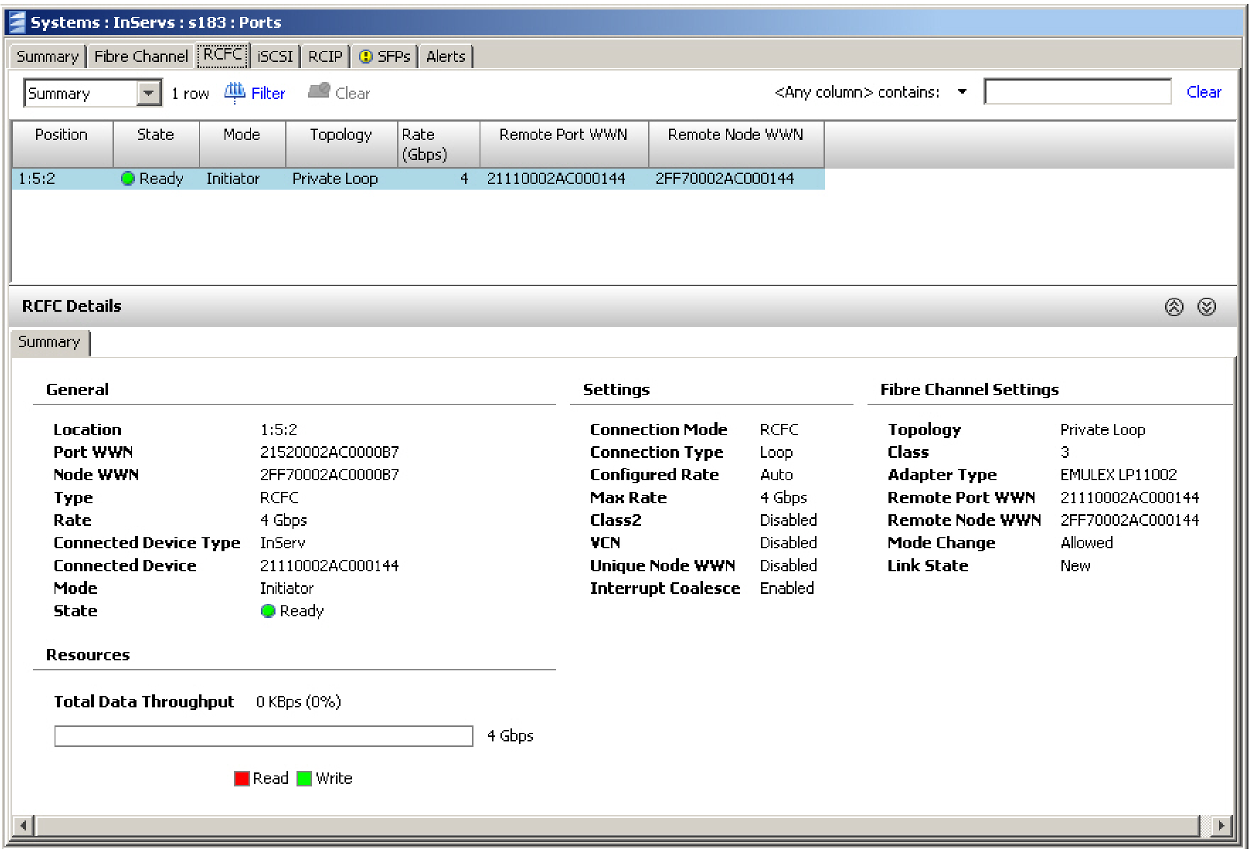
Column	Description
Host ID	The ID of the host.
Host Name	The name of the host.
Domain	The domain in which the host resides.
WWN	The hosts WWN.
Port	The hosts location in N:S:P (Node:Slot:Port) format.

Viewing System RCFC Ports

To view system Remote Copy over Fibre Channel (RCFC) port information:

1. Access the **Ports** screen.
2. In the Management Window, click the **RCFC** tab.

The **RCFC** tab appears as follows:



Position	State	Mode	Topology	Rate (Gbps)	Remote Port WWN	Remote Node WWN
1:5:2	● Ready	Initiator	Private Loop	4	21110002AC000144	2FF70002AC000144

General

Location	1:5:2
Port WWN	21520002AC0000B7
Node WWN	2FF70002AC0000B7
Type	RCFC
Rate	4 Gbps
Connected Device Type	InServ
Connected Device	21110002AC000144
Mode	Initiator
State	● Ready

Settings

Connection Mode	RCFC
Connection Type	Loop
Configured Rate	Auto
Max Rate	4 Gbps
Class2	Disabled
VCN	Disabled
Unique Node WWN	Disabled
Interrupt Coalesce	Enabled

Fibre Channel Settings

Topology	Private Loop
Class	3
Adapter Type	EMULEX LP11002
Remote Port WWN	21110002AC000144
Remote Node WWN	2FF70002AC000144
Mode Change	Allowed
Link State	New

Resources

Total Data Throughput 0 KBps (0%)

4 Gbps

🟥 Read 🟩 Write

The **RCFC** tab is divided into an upper pane and a lower pane. The upper pane displays a summary of all RCFC ports in the system. The lower pane displays detailed information about a single port selected from the upper pane.

Upper_Pane

Lower_Pane

Upper Pane

The upper pane presents the following information:

Column	Description
Position	The port location in node:slot:port format.
State	The state of the port. See System and Component Status Icons.
Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.

Topology	Type of connection (**Private Loop**, **Public Loop**, or **Point-Point**).
Rate	Rate that data can be transferred over the port (**1 Gbps, 2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.
Remote Port WWN	World Wide Name of the remote port.
Remote Node WWN	World Wide Name of the remote node.

Lower Pane

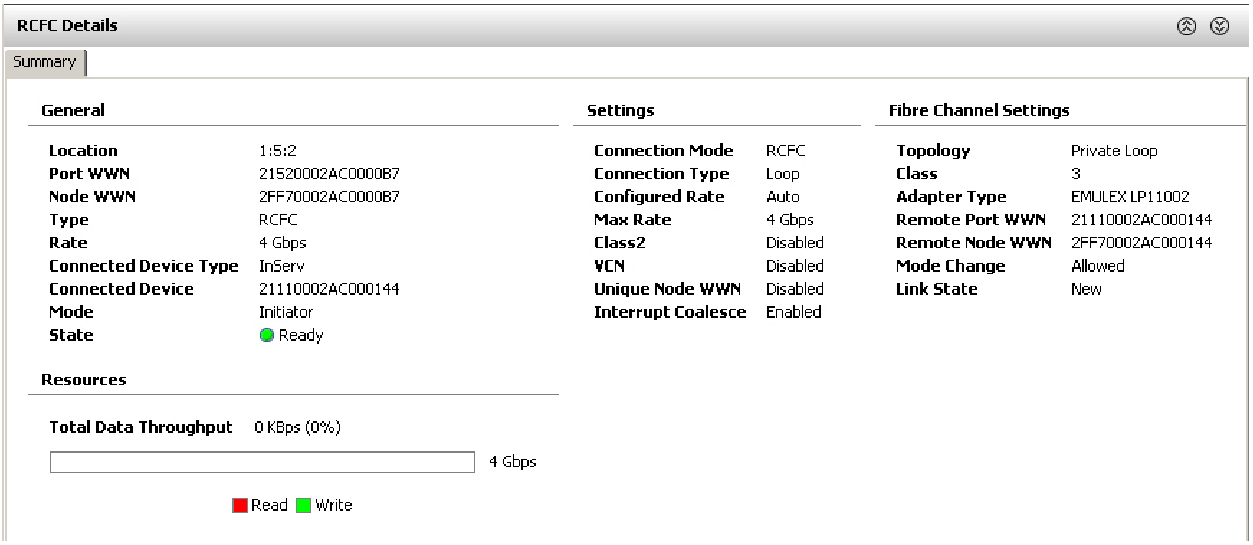
The lower pane provides detail information about a selected RCFC port from the upper pane. Information is presented on a **Summary** tab, and depending on your system setup, an **SFP** tab. Each are discussed in detail in the following:

RCFC_Port_Summary

SFP

RCFC Port Summary

The RCFC port summary is displayed on the **Summary** tab.



General

Location	1:5:2
Port WWN	21520002AC0000B7
Node WWN	2FF70002AC0000B7
Type	RCFC
Rate	4 Gbps
Connected Device Type	InServ
Connected Device	21110002AC000144
Mode	Initiator
State	● Ready

Resources

Total Data Throughput 0 KBps (0%)

4 Gbps

🟥 Read 🟩 Write

Settings

Connection Mode	RCFC
Connection Type	Loop
Configured Rate	Auto
Max Rate	4 Gbps
Class2	Disabled
VCN	Disabled
Unique Node WWN	Disabled
Interrupt Coalesce	Enabled

Fibre Channel Settings

Topology	Private Loop
Class	3
Adapter Type	EMULEX LP11002
Remote Port WWN	21110002AC000144
Remote Node WWN	2FF70002AC000144
Mode Change	Allowed
Link State	New

The following information is provided:

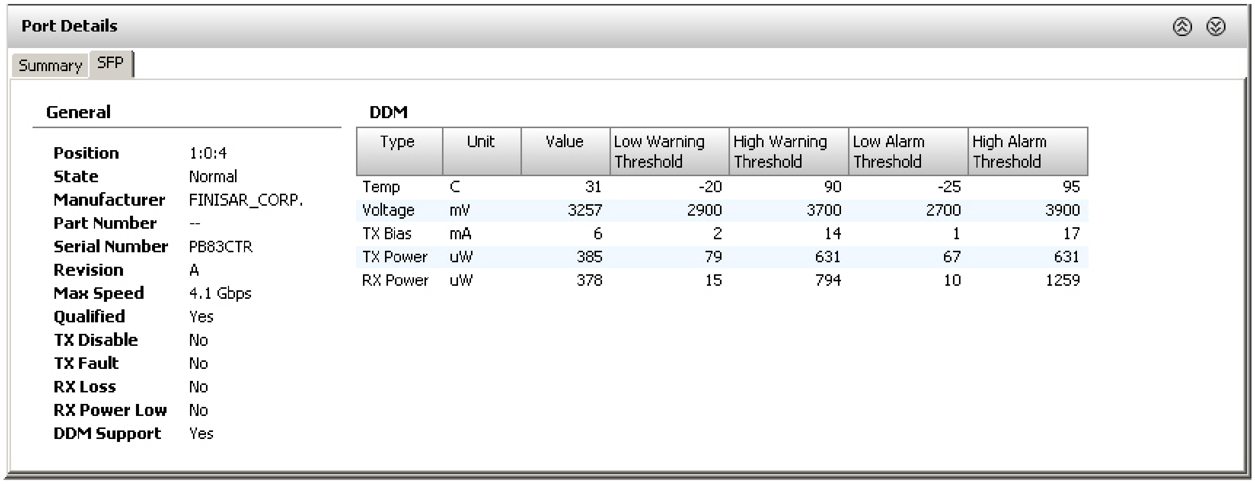
Group	Field	Description
General	**Location**	Port location.
	Port WWN	Port World Wide Name.
	Node WWN	Node World Wide Name.
	Type	Indicates whether the port is **FC**, **iSCSI**, **RCIP**, or **RCFC**.
	Rate	Rate that data can be transferred over the port (**1 Gbps, 2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.
	Connected Device Type	Type of device that the port is connected to. **Free**, **Disk**, **Host**, or **InServ**.
	Connected Device	Name of device that the port is connected to, e.g. host1, cage0.
	Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.
	State	Current state of the port.
Resources	**Total Data Throughput**	The throughput in KIB/sec.
Settings	**Connection Mode**	The type of port connection.
	Connection Type	Connection type or port connection setting (**Loop**, **Point**, or **Loop-point**). When the port is set to **Loop-point**, both loop and point-to-point connections are enabled.
	Configured Rate	Data transfer rate setting (for example, **1 Gbps**). **Auto** indicates that the system automatically selects the rate.
	Max Rate	Maximum rate of connection from the port.

	Class 2	Indicates whether Fibre Channel service Class 2 is **Disabled**, **Ack 1** or **Ack 0**.
	VCN	For fabric attached ports, indicates the *VLUN change notification* setting. When set to **Enabled**, notices are generated and sent to the fabric controller. When set to **Disabled**, no notification is sent.
	Unique Node WWN	Indicates whether the node's WWN is **Enabled** or **Disabled**. Not available for systems running InForm OS 2.2.4 or lower.
	Interrupt Coalesce	If **Disabled**, each I/O generates a separate interrupt to the HBA port driver rather than generating one interrupt for multiple I/O completion. Not available for systems running InForm OS 2.2.4 or lower.
Fibre Channel Settings	**Topology**	Type of connection (**Private Loop**, **Public Loop**, or **Point-Point**).
	Class	Identifies which Fibre Channel classes of service are enabled (**2**, **3**, or **2/3**). **2/3** indicates that both Class 2 and Class 3 are enabled.
	Adaptor Type	Model of the Fibre Channel adapter that contains the port (for example, **QLOGIC 2302**).
	Remote Port WWN	World Wide Name of the remote port.
	Remote Node WWN	World Wide Name of the remote node.
	Mode Change	Indicates whether port mode change from initiator to target or vice versa is **Allowed** or **Prohibited**. This setting is configured using the InForm CLI command **controlport**.
	Link State	The state of the link.
Note: **Persona** information is not displayed on systems using InForm OS 2.3.1 or higher.		
Persona (not shown)	**Persona**	Number for the current port persona setting.

	Vendor	Manufacturer of the host computer’s network adapter. This value is determined by the port persona.
	Adapter Type	Host computer's network adapter. This value is determined by the port persona.
	OS	Host computer’s operating system. This value is determined by the port persona.
	Connection	Indicates whether the connection is **Direct Connect** or **Fabric Attached**, as determined by the port persona.
	Modified	When a persona has been edited by a user, **Modified** appears in this column. Otherwise, this column remains blank (**--**).

SFP

The RCFC SFP information is presented on the **SFP** tab.



General

Position	1:0:4
State	Normal
Manufacturer	FINISAR_CORP.
Part Number	--
Serial Number	PB83CTR
Revision	A
Max Speed	4.1 Gbps
Qualified	Yes
TX Disable	No
TX Fault	No
RX Loss	No
RX Power Low	No
DDM Support	Yes

DDM

Type	Unit	Value	Low Warning Threshold	High Warning Threshold	Low Alarm Threshold	High Alarm Threshold
Temp	C	31	-20	90	-25	95
Voltage	mV	3257	2900	3700	2700	3900
TX Bias	mA	6	2	14	1	17
TX Power	uW	385	79	631	67	631
RX Power	uW	378	15	794	10	1259

The following information is provided:

Group	Field	Description
General	**Position**	The location of the SFP within the system.
	State	Current condition of the SFP.
	Manufacturer	Manufacturer of the SFP.

	Part Number	Part number of the SFP.
	Serial Number	Serial number of the SFP.
	Revision	SFP's revision level.
	Max Speed	Maximum speed allowed by the SFP.
	Qualified	Displays whether the SFP has been tested and if the SFP is supported.
	TX Disable	Displays whether the transmit laser is disabled.
	TX Fault	Displays whether the transmit laser has a problem.
	RX Loss	Displays whether the receive end of the SFP is experiencing a loss of signal from the host or drive cage.
	RX Power Low	Displays whether the SFP receive power is low.
	DDM Support	Displays whether the SFP is DDM-capable (Digital Diagnostic Monitoring).
	Column	**Description**
DDM	**Type**	Identifies the monitored parameters (temperature, voltage, TX bias, TX power, and RX power).
	Unit	The unit of measure used for the monitored parameters.
	Value	The current measured value.
	Low Threshold Warning	The manufacturer's recommended lower-limit warning level.
	High Threshold Warning	The manufacturer's recommended upper-limit warning level.
	Low Alarm Threshold	The manufacturer's recommended lower-limit alarm level.

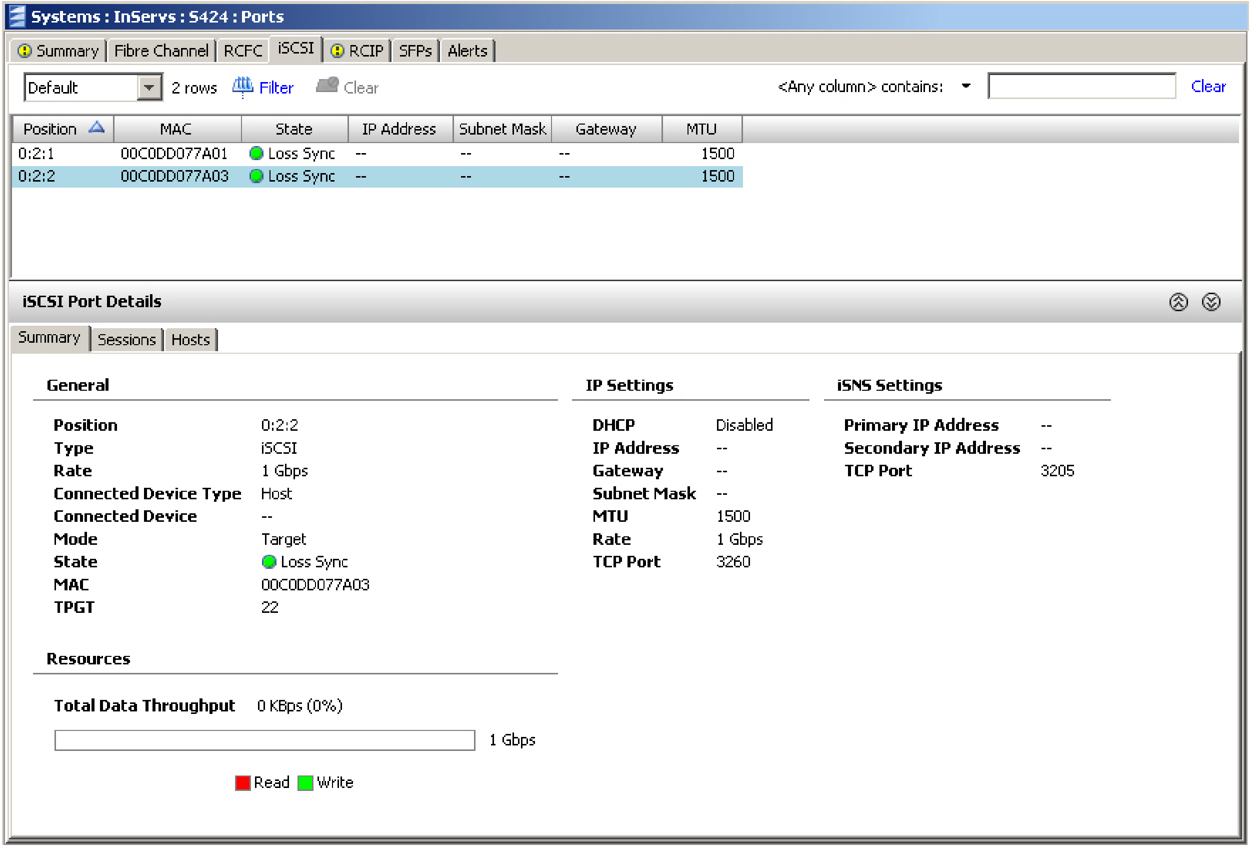
	High Alarm Threshold	The manufacturer's recommended upper-limit alarm level.

Viewing System iSCSI Ports

To view system iSCSI port information:

1. Access the **Ports** screen.
2. In the Management Window, click the **iSCSI** tab.

The **iSCSI** tab appears as follows:


Systems : InServs : S424 : Ports
Summary
Fibre Channel
RCFC
iSCSI
RCIP
SFPs
Alerts
Default
2 rows
Filter
Clear
<Any column> contains:
Clear
iSCSI Port Details
Summary
Sessions
Hosts

Position	MAC	State	IP Address	Subnet Mask	Gateway	MTU
0:2:1	00C0DD077A01	● Loss Sync	--	--	--	1500
0:2:2	00C0DD077A03	● Loss Sync	--	--	--	1500

General

Position	0:2:2
Type	iSCSI
Rate	1 Gbps
Connected Device Type	Host
Connected Device	--
Mode	Target
State	● Loss Sync
MAC	00C0DD077A03
TPGT	22

IP Settings

DHCP	Disabled
IP Address	--
Gateway	--
Subnet Mask	--
MTU	1500
Rate	1 Gbps
TCP Port	3260

iSNS Settings

Primary IP Address	--
Secondary IP Address	--
TCP Port	3205

Resources

Total Data Throughput 0 KBps (0%)

1 Gbps

🟥 Read 🟩 Write

The **iSCSI** tab is divided into an upper pane and a lower pane. The upper pane displays a summary of all iSCSI ports in the system. The lower pane displays detailed information about a single port selected from the upper pane.

Upper_Pane

Lower_Pane

Upper Pane

The upper pane presents the following information:

Column	Description
Position	The port location in node:slot:port format.
MAC	Media Access Control address of the connected device.
State	The state of the port. See System and Component Status Icons.
IP Address	IP address of the iSCSI port.
Subnet Mask	Netmask address for the iSCSI interface.
Gateway	The address of a local IP router on the same network as the InServ, used to forward traffic to destinations beyond the local network.
MTU	Maximum Transmission Unit. The greatest amount of data or "packet" size that can be transferred in one physical frame on a network. MTU setting for the iSCSI port. The default setting is 1500. When supported by the network, an MTU value of 9000 should be used.

Lower Pane

The lower pane provides detail information about a selected port from the upper pane. Information is presented a **Summary** tab, a **Sessions** tab, and a **Hosts** tab. Each are discussed in detail in the following:

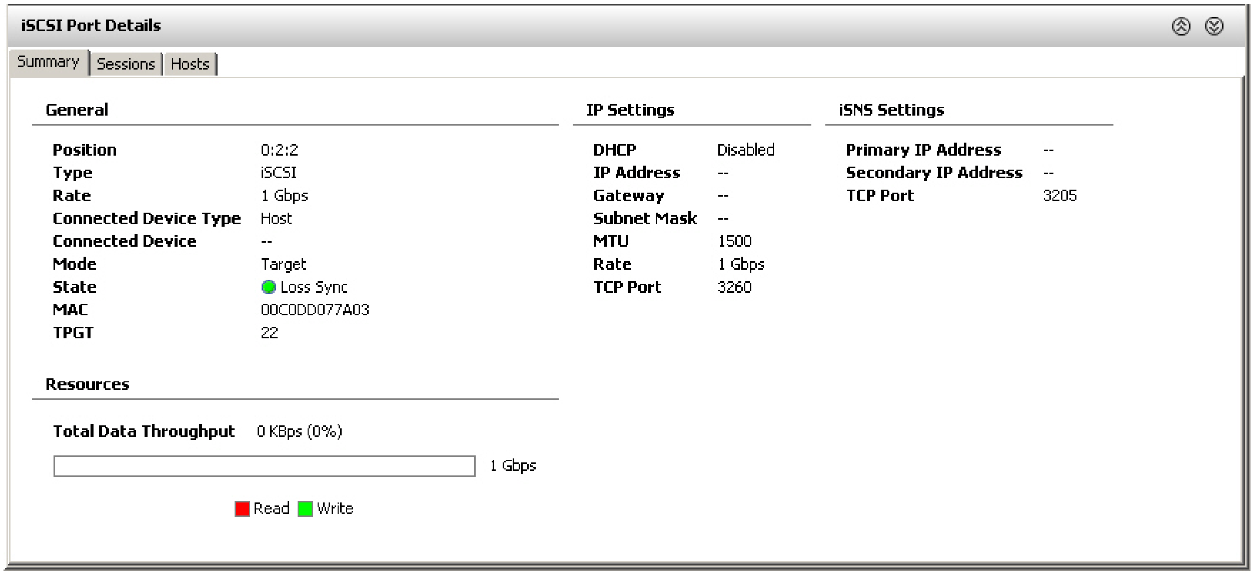
iSCSI_Port_Summary

Sessions

Hosts

iSCSI Port Summary

The iSCSI port summary is displayed on the **Summary** tab.



General

Position	0:2:2
Type	iSCSI
Rate	1 Gbps
Connected Device Type	Host
Connected Device	--
Mode	Target
State	● Loss Sync
MAC	00C0DD077A03
TPGT	22

IP Settings

DHCP	Disabled
IP Address	--
Gateway	--
Subnet Mask	--
MTU	1500
Rate	1 Gbps
TCP Port	3260

iSNS Settings

Primary IP Address	--
Secondary IP Address	--
TCP Port	3205

Resources

Total Data Throughput 0 KBps (0%)

1 Gbps

🟥 Read 🟩 Write

The following information is provided:

Group	Field	Description
General	**Position**	Port location.
	Type	Indicates whether the port is **FC**, **iSCSI**, **RCIP**, or **RCFC**.
	Rate	Rate that data can be transferred over the port (**1 Gbps, 2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.
	Connected Device Type	Type of device that the port is connected to. **Free**, **Disk**, **Host**, or **InServ**.
	Connected Device	Name of device that the port is connected to, e.g. host1, cage0.
	Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.
	State	Current state of the port.

	MAC	The Media Access Control address for the Ethernet interface.
	TPGT	The Target Portal Group Tag for the iSCSI target portal group.
Resources	**Total Data Throughput**	The throughput in KIB/sec.
IP Settings	**DHCP**	For iSCSI ports. Indicates if the Dynamic Host Configuration Protocol (DHCP) protocol is enabled.
	IP Address	IP address of the iSCSI port.
	Gateway	The address of a local IP router on the same network as the InServ, used to forward traffic to destinations beyond the local network.
	Subnet Mask	Netmask address for the iSCSI interface.
	MTU	Maximum Transmission Unit. The greatest amount of data or "packet" size that can be transferred in one physical frame on a network. MTU setting for the iSCSI port. The default setting is 1500. When supported by the network, an MTU value of 9000 should be used.
	Rate	Data transfer rate. A value of 0 indicates that no data is being transferred.
	TCP Port	The TCP port number used by the iSCSI card.
iSNS Settings	**Primary IP Address**	Primary Internet Storage Name Service (iSNS) server IP address. iSNS protocol allows for automated discovery, management, and configuration of iSCSI.
	Secondary IP Address	Secondary iSNS server IP address.
	TCP Port	The port on the iSNS server with which to communicate.

Sessions

The following information is provided:

Column	Description
Position	Location of the iSCSI port.
IP Address	IP address of the host that initiated the connection.
TSIH	Identifier for the Target Session Identifying Handle (TSIH).
iSCSI	iSCSI name for the associated iSCSI host path.
Connection Count	Number of connections for this session.
Start Time	Time the session started.

Hosts

The following information is provided:

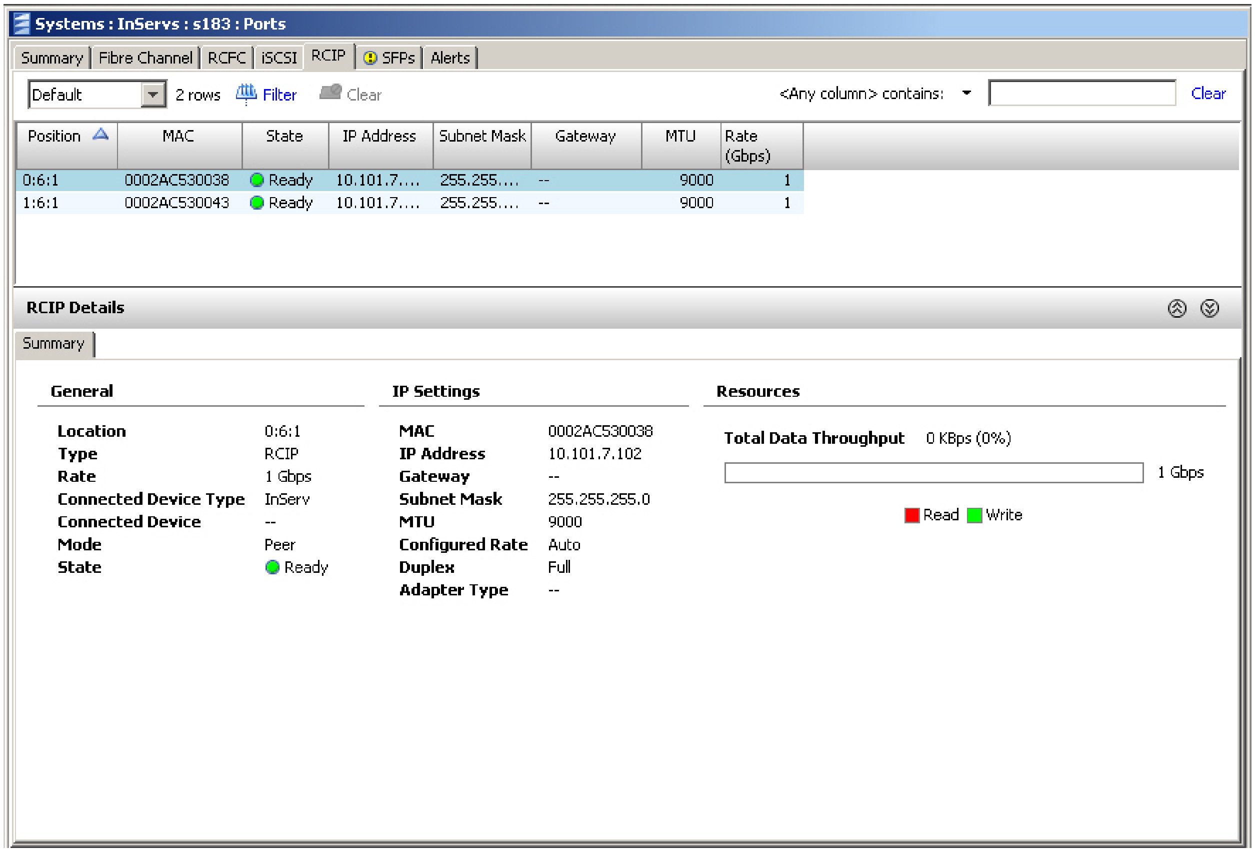
Column	Description
Host ID	Unique number for the port.
Host Name	Name of a host to which the target port connects.
Domain	Name of the domain associated with the host, if applicable.
IP Address	IP address of the iSCSI port.

Viewing System RCIP Ports

To view system Remote Copy over IP (RCIP) port information:

1. Access the **Ports** screen.
2. In the Management Window, click the **RCIP** tab.

The **RCIP** tab appears as follows:


Systems : InServs : s183 : Ports
Summary
Fibre Channel
RCFC
iSCSI
RCIP
SFPs
Alerts
Default
2 rows
Filter
Clear
<Any column> contains:
Clear

Position	MAC	State	IP Address	Subnet Mask	Gateway	MTU	Rate (Gbps)
0:6:1	0002AC530038	● Ready	10.101.7....	255.255....	--	9000	1
1:6:1	0002AC530043	● Ready	10.101.7....	255.255....	--	9000	1

RCIP Details

Summary

General

Location	0:6:1
Type	RCIP
Rate	1 Gbps
Connected Device Type	InServ
Connected Device	--
Mode	Peer
State	● Ready

IP Settings

MAC	0002AC530038
IP Address	10.101.7.102
Gateway	--
Subnet Mask	255.255.255.0
MTU	9000
Configured Rate	Auto
Duplex	Full
Adapter Type	--

Resources

Total Data Throughput 0 KBps (0%)

1 Gbps
🟥 Read 🟩 Write

The **RCIP** tab is divided into an upper pane and a lower pane. The upper pane displays a summary of all RCIP ports in the system. The lower pane displays detailed information about a single port selected from the upper pane.

The upper pane provides the following information:

Column	Description
Position	The port location in node:slot:port format.
MAC	Media Access Control address of the connected device.
State	The state of the port. See System and Component Status Icons.
IP Address	IP address of the RCIP port.
Subnet Mask	Netmask address for the RCIP interface.
Gateway	The address of a local IP router on the same network as the InServ, used to forward traffic to destinations beyond the local network.

MTU	Maximum Transmission Unit. The greatest amount of data or "packet" size that can be transferred in one physical frame on a network. MTU setting for the iSCSI port. The default setting is 1500. When supported by the network, an MTU value of 9000 should be used.
Rate	Rate that data can be transferred over the port (**1 Gbps**, **2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.

The lower pane provides the following information:

Group	Field	Description
General	**Location**	Port location.
	Type	Indicates whether the port is **FC**, **iSCSI**, **RCIP**, or **RCFC**.
	Rate	Rate that data can be transferred over the port (**1 Gbps**, **2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.
	Connected Device Type	Type of device that the port is connected to. **Free**, **Disk**, **Host**, or **InServ**.
	Connected Device	Name of device that the port is connected to, e.g. host1, cage0.
	Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.
	State	Current state of the port.
IP Settings	**MAC**	The Media Access Control address for the Ethernet interface.
	IP Address	IP address of the RCIP port.
	Gateway	The address of a local IP router on the same network as the InServ, used to forward traffic to destinations beyond the local network.
	Subnet Mask	Netmask address for the RCIP interface.

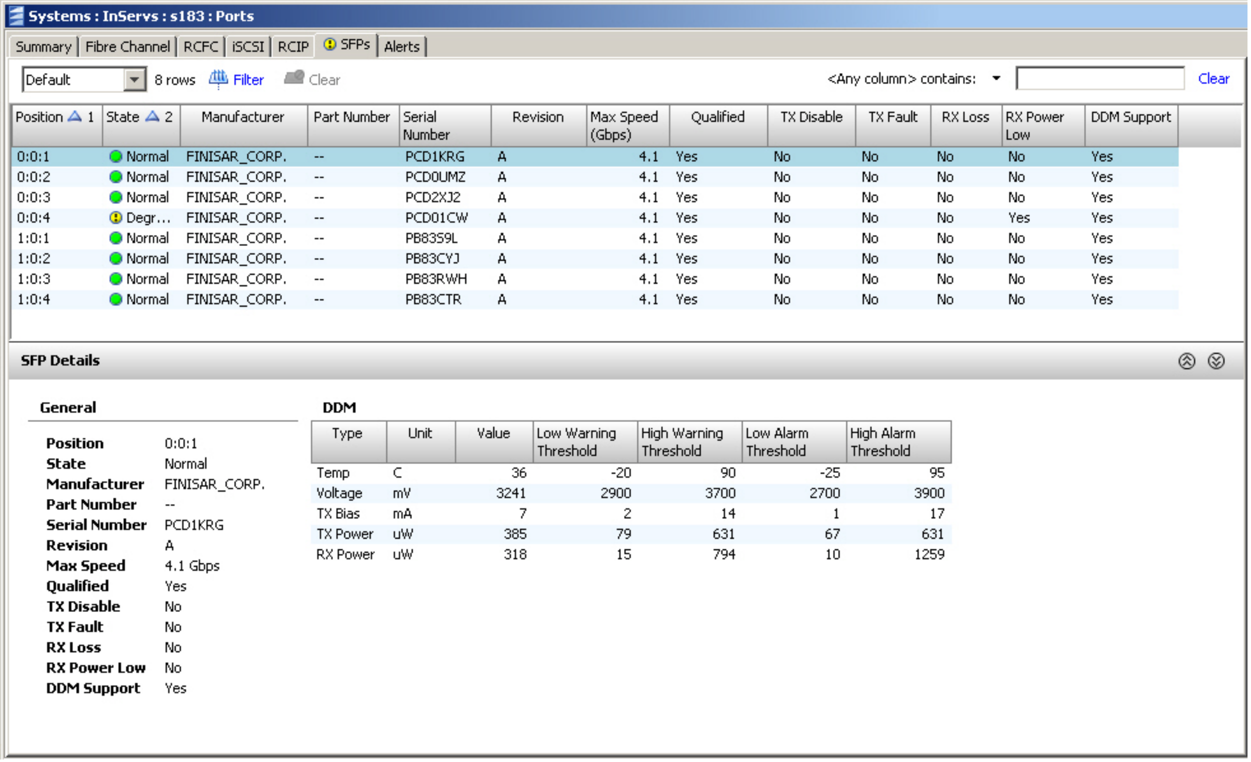
	MTU	Maximum Transmission Unit. The greatest amount of data or "packet" size that can be transferred in one physical frame on a network. MTU setting for the iSCSI port. The default setting is 1500. When supported by the network, an MTU value of 9000 should be used.
	Configured Rate	The duplex speed, **Half** or **Full**.
	Duplex	Model of the adapter that contains the port (for example, **Intel PRO/1000MT**).
	Adapter Type	The TCP port number used by the iSCSI or RCIP card.
Resources	**Total Data Throughput**	The throughput in KIB/sec.

Viewing SFP Information

To view port SFP information:

1. Access the **Ports** screen.
2. In the Management Window, click the **SFPs** tab.

The **SFPs** tab appears as follows:



Position 1	State 2	Manufacturer	Part Number	Serial Number	Revision	Max Speed (Gbps)	Qualified	TX Disable	TX Fault	RX Loss	RX Power Low	DDM Support
0:0:1	● Normal	FINISAR_CORP.	--	PCD1KRG	A	4.1	Yes	No	No	No	No	Yes
0:0:2	● Normal	FINISAR_CORP.	--	PCD0UMZ	A	4.1	Yes	No	No	No	No	Yes
0:0:3	● Normal	FINISAR_CORP.	--	PCD2XJ2	A	4.1	Yes	No	No	No	No	Yes
0:0:4	⚠ Degr…	FINISAR_CORP.	--	PCD01CW	A	4.1	Yes	No	No	No	Yes	Yes
1:0:1	● Normal	FINISAR_CORP.	--	PB83S9L	A	4.1	Yes	No	No	No	No	Yes
1:0:2	● Normal	FINISAR_CORP.	--	PB83CYJ	A	4.1	Yes	No	No	No	No	Yes
1:0:3	● Normal	FINISAR_CORP.	--	PB83RWH	A	4.1	Yes	No	No	No	No	Yes
1:0:4	● Normal	FINISAR_CORP.	--	PB83CTR	A	4.1	Yes	No	No	No	No	Yes

SFP Details

General

Position	0:0:1
State	Normal
Manufacturer	FINISAR_CORP.
Part Number	--
Serial Number	PCD1KRG
Revision	A
Max Speed	4.1 Gbps
Qualified	Yes
TX Disable	No
TX Fault	No
RX Loss	No
RX Power Low	No
DDM Support	Yes

DDM

Type	Unit	Value	Low Warning Threshold	High Warning Threshold	Low Alarm Threshold	High Alarm Threshold
Temp	C	36	-20	90	-25	95
Voltage	mV	3241	2900	3700	2700	3900
TX Bias	mA	7	2	14	1	17
TX Power	uW	385	79	631	67	631
RX Power	uW	318	15	794	10	1259

The **SFPs** tab is divided into an upper pane and a lower pane. The upper pane displays a summary of all SFPs in the system. The lower pane displays detailed information about a single SFP selected from the upper pane.

The upper pane provides the following information:

Column	Description
Position	Position of the port in which the SFP is installed.
State	The drive cage state. See System and Component Status Icons.
Manufacturer	The SFP manufacturer.
Part Number	The SFP's part number.
Serial Number	The SFP's serial number.
Revision	The revision level of the SFP.

Max Speed	Maximum speed allowed by the SFP.
Qualified	Displays whether the SFP has been qualified by 3PAR.
TX Disable	Displays whether the transmit laser is disabled.
TX Fault	Displays whether the transmit laser has a problem.
RX Loss	Displays whether the receive end of the SFP is experiencing a loss of signal from the host or drive cage.
RX Power Low	Displays whether the SFP receive power is low.
DDM Support	Displays whether the SFP is DDM-capable (Digital Diagnostic Monitoring).

The lower pane provides the following information:

Group	Field	Description
General	**Position**	Position of the port in which the SFP is installed.
	State	Current condition of the SFP.
	Manufacturer	Manufacturer of the SFP.
	Part Number	Part number of the SFP.
	Serial Number	Serial number of the SFP.
	Revision	SFP's revision level.
	Max Speed	Maximum speed allowed by the SFP.
	Qualified	Displays whether the SFP has been tested and if the SFP is supported.

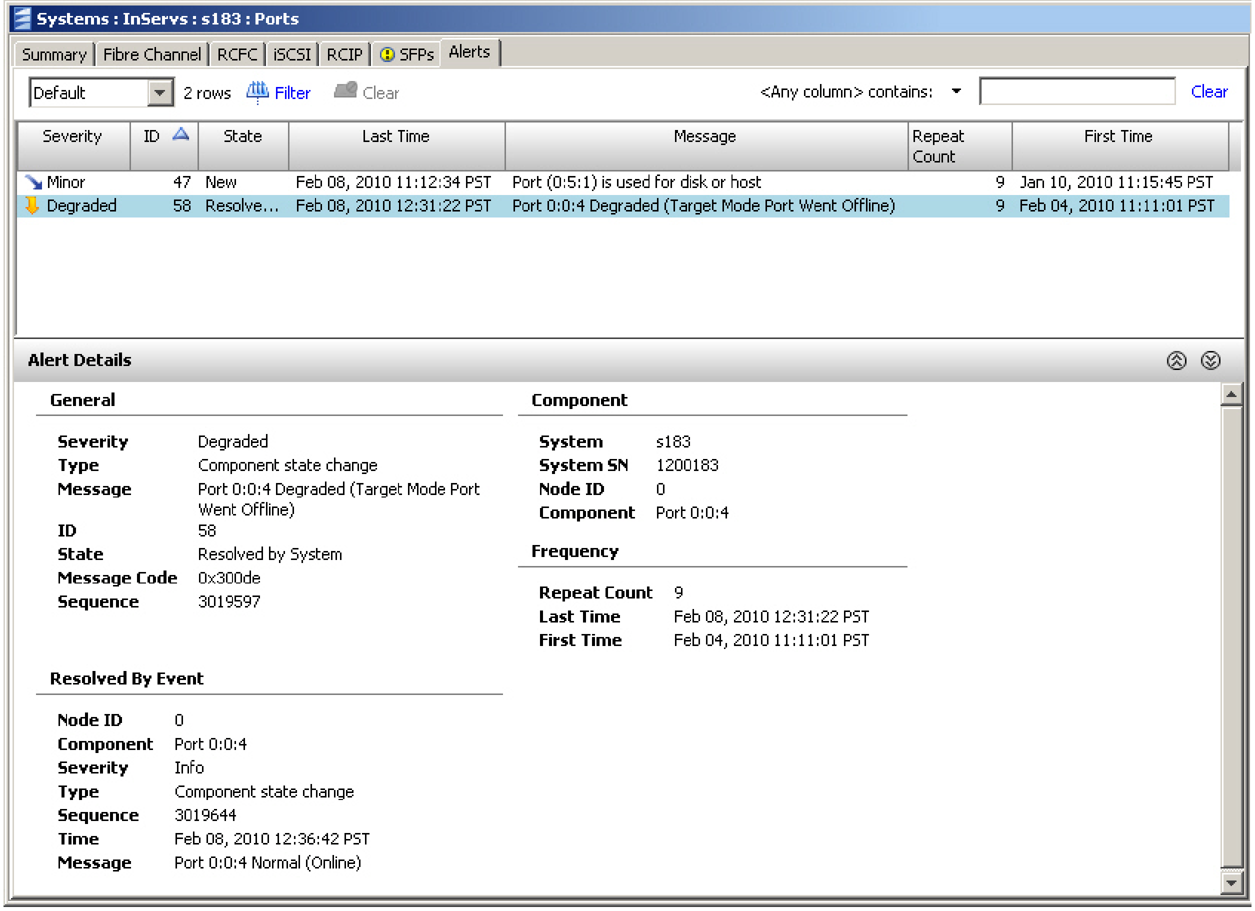
	TX Disable	Displays whether the transmit laser is disabled.
	TX Fault	Displays whether the transmit laser has a problem.
	RX Loss	Displays whether the receive end of the SFP is experiencing a loss of signal from the host or drive cage.
	RX Power Low	Displays whether the SFP receive power is low.
	DDM Support	Displays whether the SFP is DDM-capable (Digital Diagnostic Monitoring).
	Column	**Description**
DDM	**Type**	Identifies the monitored parameters (temperature, voltage, TX bias, TX power, and RX power).
	Unit	The unit of measure used for the monitored parameters.
	Value	The current measured value.
	Low Threshold Warning	The manufacturer's recommended lower-limit warning level.
	High Threshold Warning	The manufacturer's recommended upper-limit warning level.
	Low Alarm Threshold	The manufacturer's recommended lower-limit alarm level.
	High Alarm Threshold	The manufacturer's recommended upper-limit alarm level.

Viewing System Port Alerts

To view port alerts:

1. Access the **Ports** screen.
2. In the Management Window, click the **Alerts** tab.

The **Alerts** tab appears as follows:



Severity	ID	State	Last Time	Message	Repeat Count	First Time
Minor	47	New	Feb 08, 2010 11:12:34 PST	Port (0:5:1) is used for disk or host	9	Jan 10, 2010 11:15:45 PST
Degraded	58	Resolve…	Feb 08, 2010 12:31:22 PST	Port 0:0:4 Degraded (Target Mode Port Went Offline)	9	Feb 04, 2010 11:11:01 PST

Alert Details

General

Severity	Degraded
Type	Component state change
Message	Port 0:0:4 Degraded (Target Mode Port Went Offline)
ID	58
State	Resolved by System
Message Code	0x300de
Sequence	3019597

Component

System	s183
System SN	1200183
Node ID	0
Component	Port 0:0:4

Frequency

Repeat Count	9
Last Time	Feb 08, 2010 12:31:22 PST
First Time	Feb 04, 2010 11:11:01 PST

Resolved By Event

Node ID	0
Component	Port 0:0:4
Severity	Info
Type	Component state change
Sequence	3019644
Time	Feb 08, 2010 12:36:42 PST
Message	Port 0:0:4 Normal (Online)

The **Alerts** tab is divided into an upper pane and a lower pane. The upper pane displays a summary of all port alerts. The lower pane displays detailed information about a single alert selected from the upper pane.

The upper pane provides the following information:

Column	Description
Severity	The severity of the alert. See Alert Severity Indicators.

ID	The alert ID.
State	The alert state.
Last Time	The last occurrence of the alert.
Message	A brief description of the alert.
Repeat Count	The number of times the alert has been issued.
First Time	The first occurrence of the alert.

The lower pane provides the following information:

Group	Field	Description
General	**Severity**	The alert severity. See Alert Severity Indicators.
	Type	The alert type.
	Message	A brief description of the alert.
	ID	The alert ID.
	State	The alert state.
	Message Code	The alert message code.
	Sequence	The alert sequence.
Resolved by Event (if resolved)	**Node ID**	The controller node ID.
	Component	The component for which the alert was issued.
	Severity	The alert severity. See Alert Severity Indicators.
	Type	The alert type.
	Sequence	The alert sequence.
	Time	The time the alert was resolved.

	Message	A brief description of the alert.
Component	**System**	The name of the server that generated the alert.
	System SN	The server's serial number.
	Node ID	The node ID.
	Component	The affected system components.
Frequency	**Repeat Count**	The number of times the alert was issued.
	Last time	The last occurrence of the alert.
	First time	The first occurrence of the alert.

Configuring Ports

The InForm Management Console allows you to configure the following types of ports:

- Fibre Channel
- iSCSI
- Remote Copy over Fiber Channel (RCFC)
- Remote Copy over IP (RCIP)

To learn how to configure ports with the InForm Management Console, see the following:

Configuring Fibre Channel Ports
Configuring iSCSI Ports
Configuring an RCFC Port
Configuring an RCIP Port

Configuring Fibre Channel Ports

To configure a Fiber Channel port, access the **Fibre Channel Port Configuration** wizard:

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, select the system on which you wish to configure the port.
3. In the Common Actions Panel, click **Configure FC Port**.

   The **Fibre Channel Port Configuration** wizard appears.

4. In the **General** group box:
   a. **System** list - Select the system on which the port will be configured.
   b. **Port** list - Select the port to be configured as a Fibre Channel port.
5. In the **Settings** group box:
   a. **Connection Mode** list - Select the mode of the port as **Disk**, **Host**, or **RCFC**.
   b. **Connection Type** list - Select whether the connection type is **Loop** or **Point.**
   c. **Unique Node WWN** - Enable or disable the node WWN.
   d. **Configured Rate** - Select **Auto (default)**, **1 Gbps**, **2 Gbps**, or **4 Gbps**.
   e. **VLUN Change Notification (VCN)** - Enable or disable the VLUN change notification.
   f. **Interrupt Coalesce** - Enable or disable the interrupt coalesce.
   g. **Persona** list - (For systems using InForm OS 2.2.4) Select the port persona.
6. Click **OK**.

See also:

Manager Pane

Management Tree

Common Actions Panel

Viewing Ports

Configuring iSCSI Ports

To configure an iSCSI port, access the **iSCSI Port Configuration** wizard:

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, select the system on which you wish to configure the port.
3. In the Common Actions Panel, click **Configure iSCSI Port**.

   The **iSCSI Port Configuration** wizard appears.

Step 1. General

1. In the **General** group box:
   a. **System** list - Select the system on which the port will be configured.
   b. **Port** list - Select the port to be configured as an RCIP port.
2. In the **IP Settings** group box, perform the following:
   a. Select **Obtain an IP Address automatically**.
   b. **MTU** list - Enter the MTU value.

   or

   a. Select **Use the following IP address**.
   b. **IP Address** - Enter the iSCSI port's IP address.
   c. **Subnet Mask** - Enter the iSCSI port's subnet mask.
   d. **Gateway** - Enter the iSCSI port's gateway address.
   e. **MTU** list -Enter the MTU value.

3. Click **Finish** to complete the iSCSI port configuration, or click **Next** to enter iSNS settings.

Step 2. iSNS Settings

1. **Primary IP Address** - Enter the Internet Storage Name Service (iSNS) IP address.
2. **Secondary IP Address** - Enter the iSNS secondary IP address.
3. **TCP Port** - Enter the iSNS TCP port. The default port is 3205.
4. Click **Finish** to complete the iSCSI port configuration, or click **Next** to view the configuration summary.

Step 3. Summary

➜Review the summary information. When satisfied, click **Finish**.

See also:

- Manager Pane
- Management Tree
- Common Actions Panel
- Viewing Ports

Configuring a Remote Copy over Fibre Channel Port

To configure a Remote Copy over Fibre Channel (RCFC) port, access the **Fibre Channel Port Configuration** wizard:

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, select the system on which you wish to configure the port.
3. In the Common Actions Panel, click **Configure FC Port**.

   The **Fibre Channel Port Configuration** wizard appears.

4. In the **General** group box:
   a. **System** list - Select the system on which the port will be configured.
   b. **Port** list - Select the port to be configured as a Fibre Channel port.
5. In the **Settings** group box:
   a. **Connection Mode** list - Select the mode of the port as **RCFC**.
   b. **Connection Type** list - Select whether the connection type is **Loop** or **Point.**
   c. **Unique Node WWN** - Enable or disable the node WWN.
   d. **Configured Rate** - Select **Auto (default)**, **1 Gbps**, **2 Gbps**, or **4 Gbps**.
   e. **VLUN Change Notification (VCN)** - Enable or disable the VLUN change notification.
   f. **Interrupt Coalesce** - Enable or disable the interrupt coalesce.
   g. **Persona** list - (For systems using InForm OS 2.2.4) Select the port persona.
6. Click **OK**.

See also:

[Manager Pane]

[Management Tree]

[Common Actions Panel]

[Viewing Ports]

[Configuring Fibre Channel Ports]

Configuring a Remote Copy over IP Port

To configure a Remote Copy over IP (RCIP) port, access the **RCIP Port Configuration** wizard:

1. In the Manager Pane, click **Systems**.
2. In the Management Tree, select the system on which you wish to configure the port.
3. In the Common Actions Panel, click **Configure RCIP Port**.

   The **RCIP Port Configuration** wizard appears.

4. In the **General** group box:
   a. **System** list - Select the system on which the port will be configured.
   b. **Port** list - Select the port to be configured as an RCIP port.
5. In the **IP Settings** group box:
   a. **IP Address** - Enter the IP address of the RCIP port. The IP address is required.
   b. **Subnet Mask** - Enter the RCIP port's subnet mask. The subnet mask is required.
   c. **Gateway** - Enter the RCIP port's gateway address.
   d. **MTU** list -Enter the MTU value.
   e. **Speed** list - Select the port speed as **Auto (default)**, **10 Mbps**, **100 Mbp**s, or **1 Gbps**.
   f. **Duplex** list - Select the port's duplex value of either **Half** or **Full**.
6. Click **OK**.

See also:

Manager Pane

Management Tree

Common Actions Panel

Viewing Ports

Clearing Port Parameters

Note: This operation can only be performed on Remote Copy over Fibre Channel, Remote Copy over IP, and iSCSI ports.

To clear a port's parameters:

1. Access the ports **Summary** tab.
2. Right-click the port to be cleared and then click **Clear** in the menu that appears.

   The **Clear Port Configuration** dialog box appears.

3. Click **Yes**.

See also:

Viewing Port Summary Information

Resetting a Port

Note: This operation cannot be performed on Remote Copy over IP (RCIP) ports.

To reset a port:

1. Access the ports **Summary** tab.
2. Right-click the port you wish to reset and then click **Reset** in the menu that appears.

   The **Reset Port** dialog box appears.

3. (Optional) Select **Reload Firmware** if you wish to reload the port firmware upon reset.
4. Click **Yes**.

See also:

Viewing Port Summary Information

Setting a Port Offline

Note: This operation cannot be performed on Remote Copy over IP ports.

To set a port offline:

1. Access the ports **Summary** tab.
2. Right-click the port you wish to set offline and then click **Set Offline** in the menu that appears.

   The **Set Offline** dialog box appears.

3. Click **Yes**.

See also:

Viewing Port Summary Information

Initializing a Port

Initializing a Port

Note: This operation can only be performed on Fibre Channel and Remote Copy over Fibre Channel (RCFC) ports.

To initialize a port:

1. Access the ports **Summary** tab.
2. Right-click the port you wish to initialize and then click **Initialize** in the menu that appears.

   The **Initialize Port** dialog box appears.

3. Click **Yes**.

See also:

Viewing Port Summary Information

Synchronizing a Port with the Name Server

Note: This operation can only be performed on Fibre Channel and Remote Copy over Fibre Channel (RCFC) ports.

To synchronize a port with the name server:

1. Access the ports **Summary** tab.
2. Right-click the port you wish to sync and then click **Name Server Sync** in the menu that appears.

   The **Name Server Sync** dialog box appears.

3. Click **Yes**.

See also:

Viewing Port Summary Information

Issuing an LIP Command

Note: This operation can only be performed on Fibre Channel and Remote Copy over Fibre Channel (RCFC) ports.

To issue an LIP command:

1. Access the ports **Summary** tab.
2. Right-click the port on which you wish to issue the LIP command and then click **Issue LIP** in the menu that appears.

   The **Issue LIP** dialog box appears.

3. Click **Yes**.

See also:

Viewing Port Summary Information

Enabling a Remote Copy Interface

Note: This operation can only be performed on Remote Copy over IP (RCIP) ports.

To enable a Remote Copy interface:

1. Access the ports **Summary** tab.
2. Right-click the disabled Remote Copy port you wish to enable and then click **Enable Interface** in the menu that appears.

   The **Enable Interface** dialog box appears.

3. Click **Yes**.

See also:

Viewing Port Summary Information

Disabling a Remote Copy Interface

Disabling a Remote Copy Interface

Note: This operation can only be performed on Remote Copy over IP (RCIP) ports.

To disable a Remote Copy interface:

1. Access the ports **Summary** tab.
2. Right-click the Remote Copy port you wish to disable and then click **Disable Interface** in the menu that appears.

   The **Disable Interface** dialog box appears.

3. Click **Yes**.

See also:

Viewing Port Summary Information

Enabling a Remote Copy Interface

Pinging a Port

To ping an iSCSI or RCIP port:

1. Access the ports **Summary** tab.
2. Right-click the iSCSI or RCIP port you wish to ping and then click **Ping** in the menu that appears.

   The **Ping Port** wizard appears.

3. In the **General** group box, enter the following:
   a. **System** - Select a system from the list.
   b. **Port** - Select the port from which you are initiating the ping.
   c. **Destination IP Address** - Enter the destination port's IP address.
   d. **Count** - The number of times (from 1 to 25) to ping the specified IP address.
   e. ***Wait Time** - Enter the wait time in seconds (5 to 30) for each ping.
   f. ***Packet Size** - Enter the number of packets (1 to 65,507) to send with each ping.
   g. *(Optional) Select **Prevent fragmentation of packets**.
4. Click **Ping**.

*For RCIP ports only.

See also:

Viewing Port Summary Information

Viewing Physical Disks

The **Physical Disks** screen displays summary information about system physical disks.

To access the Drive Cages screen:

1. Click **Systems** in the Manager Pane.
2. In the Management Tree, select **Physical Disks** under the system whose physical disk information you wish to view.

The **Physical Disks** screen provides four tabs, **Summary**, **Physical Disks**, **Spares**, and **Alerts**. For information about each, see:

Viewing the Physical Disk Summary Tab

Viewing the Physical Disks Tab

Viewing the Physical Disks Spares Tab

Viewing the Physical Disks Alerts Tab

See also:

Manager Pane

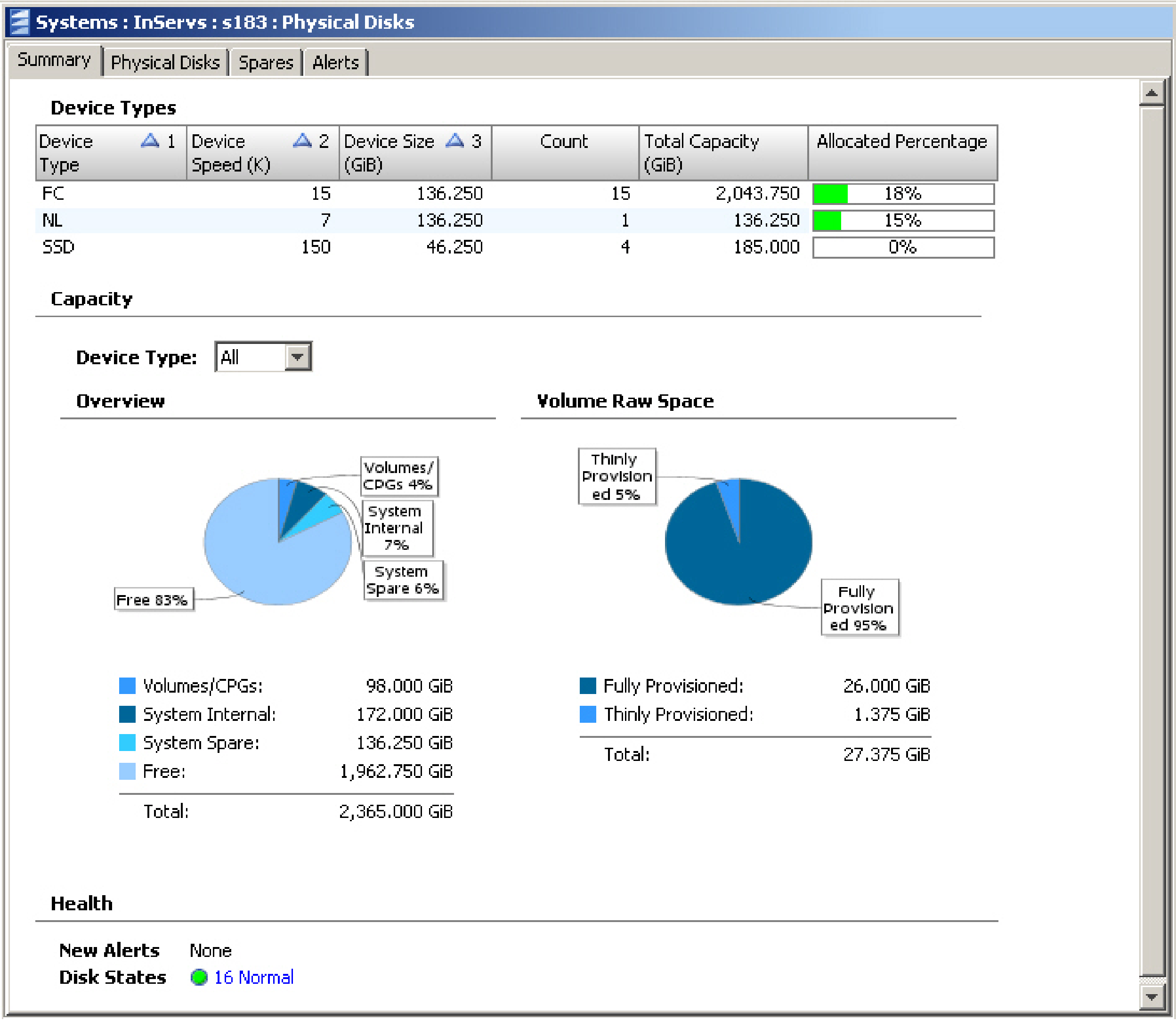
Management Tree

Viewing the Physical Disks Summary Tab

To view the physical disks **Summary** tab:

1. Access the **Physical Disks** screen.
2. Click the **Summary** tab.

The **Summary** tab appears as follows:



Systems : InServs : s183 : Physical Disks
Summary
Physical Disks
Spares
Alerts

Device Types

Device Type △ 1	Device Speed (K) △ 2	Device Size (GiB) △ 3	Count	Total Capacity (GiB)	Allocated Percentage
FC	15	136.250	15	2,043.750	18%
NL	7	136.250	1	136.250	15%
SSD	150	46.250	4	185.000	0%

Capacity

Device Type: All

Overview

Volumes/ CPGs 4%
System Internal 7%
System Spare 6%
Free 83%

Volumes/CPGs:	98.000 GiB
System Internal:	172.000 GiB
System Spare:	136.250 GiB
Free:	1,962.750 GiB
Total:	2,365.000 GiB

Volume Raw Space

Thinly Provision ed 5%
Fully Provision ed 95%

Fully Provisioned:	26.000 GiB
Thinly Provisioned:	1.375 GiB
Total:	27.375 GiB

Health

New Alerts None
Disk States ● 16 Normal

The following information is displayed:

Group	Field	Description
Device Types	**Device Type**	The type of physical disk, either Fibre Channel (**FC**), Near Line (**NL**), or Solid State (**SSD**).
	Device Speed	The disk speed.
	NOTE: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	

	Device Size	The disk size in GiB.
	Count	The number of each type of disk.
	Total Capacity	The total capacity (in GiB) for each type of disk.
	Allocated Percentage	Amount of storage (in percent) consumed by the disk drive.
Capacity	**Device Type**	Select the device type, Fibre Channel (**FC**), Near Line (**NL**), or Solid State Device (**SSD**), or **All**. The capacity and capacity usage of the selected device type is displayed in graphical form.
	Overview	Displays the physical disks' free and used space (in GiB).
	Volume Raw Space	Displays the physical disks' fully provisioned space and thinly provisioned space.
Health	**New Alerts**	The number of new physical disk alerts.
	Disk State	The current state of the system's physical disks. See System and Component Status Icons.

See also:

Viewing Physical Disks

System and Component Status Icons

Viewing the Physical Disks Tab

To view the **Physical Disk** tab:

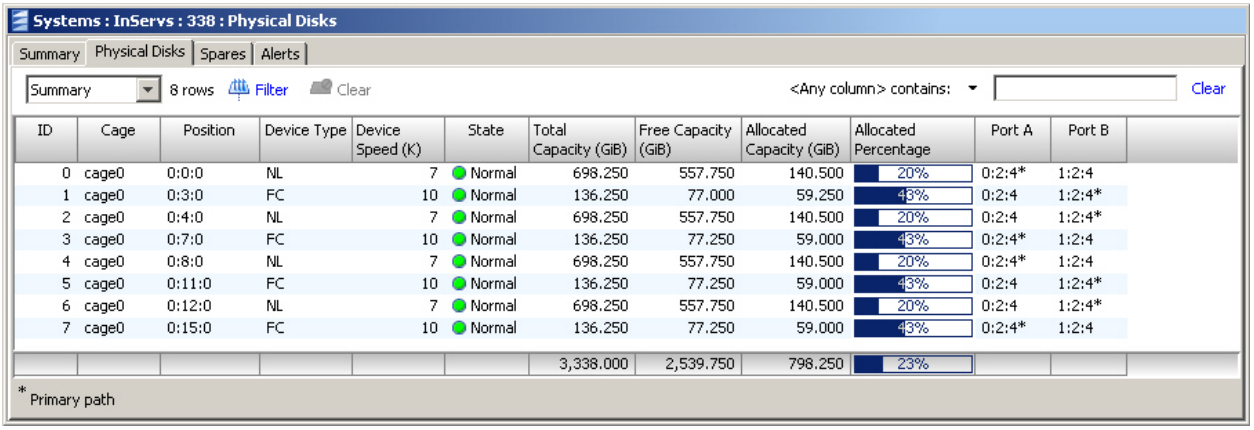
1. Access the **Physical Disks** screen.
2. Click the **Physical Disks** tab.

The **Physical Disks** tab can be filtered to display Summary, Capacity, Chunklet Usage, Inventory, Environmental, State, and Paths information.

Note: In the following sections, where shown, the **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.

Displaying Summary Information

➜ To view physical disk summary information, select **Summary** from the filtering list. The summary information appears as follows:



ID	Cage	Position	Device Type	Device Speed (K)	State	Total Capacity (GiB)	Free Capacity (GiB)	Allocated Capacity (GiB)	Allocated Percentage	Port A	Port B
0	cage0	0:0:0	NL	7	● Normal	698.250	557.750	140.500	20%	0:2:4*	1:2:4
1	cage0	0:3:0	FC	10	● Normal	136.250	77.000	59.250	43%	0:2:4	1:2:4*
2	cage0	0:4:0	NL	7	● Normal	698.250	557.750	140.500	20%	0:2:4	1:2:4*
3	cage0	0:7:0	FC	10	● Normal	136.250	77.250	59.000	43%	0:2:4*	1:2:4
4	cage0	0:8:0	NL	7	● Normal	698.250	557.750	140.500	20%	0:2:4*	1:2:4
5	cage0	0:11:0	FC	10	● Normal	136.250	77.250	59.000	43%	0:2:4	1:2:4*
6	cage0	0:12:0	NL	7	● Normal	698.250	557.750	140.500	20%	0:2:4	1:2:4*
7	cage0	0:15:0	FC	10	● Normal	136.250	77.250	59.000	43%	0:2:4*	1:2:4
						3,338.000	2,539.750	798.250	23%		

* Primary path

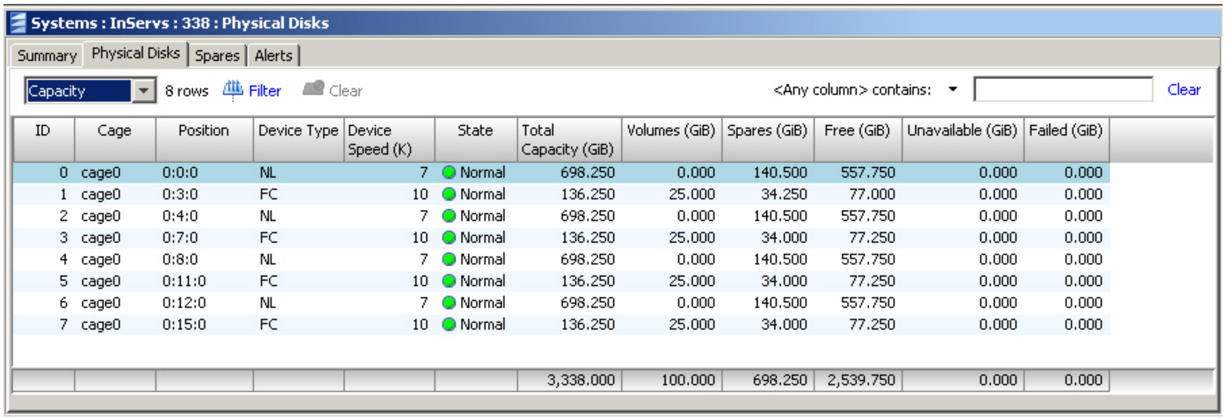
The following information is displayed:

Column	Description
ID	Physical disk ID, as assigned by the system. Physical disks are numbered contiguously during system installation beginning with 0.
Cage	The drive cage in which the disk resides.
Position	Location of the disk in the format: **N**:**S**:**P** (**N**ode:**S**lot:**P**ort).
Device Type	Indicates whether a physical disk is a Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**) drive.
Device Speed	Speed of the specified disk. (RPM)
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into	

account in I/O per second, bandwidth, and the access time.	
State	State of the disk as identified by the kernel. See **Error! Hyperlink reference not valid.**.
Total Capacity	Total amount of usable storage for this disk drive.
Free Capacity	Amount of free space in the disk drive, regardless of initialized or not.
Allocated Capacity	Amount of storage remaining for use on the disk drive.
Allocated Percentage	Amount of storage (in percent) consumed by the disk drive.
Port A	Location of the primary initiator port to which the disk is attached.
Port B	Location of the secondary initiator port to which the disk is attached.

Displaying Capacity Information

➡To view physical disk capacity information, select **Capacity** from the filtering list. The capacity information appears as follows:



ID	Cage	Position	Device Type	Device Speed (K)	State	Total Capacity (GiB)	Volumes (GiB)	Spares (GiB)	Free (GiB)	Unavailable (GiB)	Failed (GiB)
0	cage0	0:0:0	NL	7	● Normal	698.250	0.000	140.500	557.750	0.000	0.000
1	cage0	0:3:0	FC	10	● Normal	136.250	25.000	34.250	77.000	0.000	0.000
2	cage0	0:4:0	NL	7	● Normal	698.250	0.000	140.500	557.750	0.000	0.000
3	cage0	0:7:0	FC	10	● Normal	136.250	25.000	34.000	77.250	0.000	0.000
4	cage0	0:8:0	NL	7	● Normal	698.250	0.000	140.500	557.750	0.000	0.000
5	cage0	0:11:0	FC	10	● Normal	136.250	25.000	34.000	77.250	0.000	0.000
6	cage0	0:12:0	NL	7	● Normal	698.250	0.000	140.500	557.750	0.000	0.000
7	cage0	0:15:0	FC	10	● Normal	136.250	25.000	34.000	77.250	0.000	0.000
						3,338.000	100.000	698.250	2,539.750	0.000	0.000

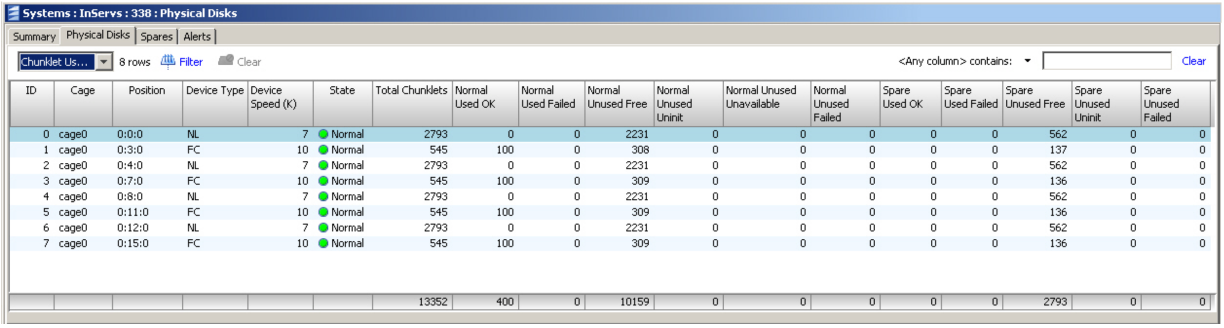
The following information is displayed:

Column	Description
ID	Physical disk ID, as assigned by the system. Physical disks are numbered contiguously during system installation beginning with 0.
Cage	The drive cage in which the disk resides.

Position	Location of the disk in the format: **N**:**S**:**P** (**N**ode:**S**lot:**P**ort).
Device Type	Indicates whether a physical disk is a Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**) drive.
Device Speed	Speed of the specified disk. (RPM)
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
State	State of the disk as identified by the kernel. See **Error! Hyperlink reference not valid.**.
Total Capacity	Total amount of usable storage for this disk drive.
Volumes	Amount of storage on the physical disk being utilized by volumes.
Spares	Amount of storage allocated as spares by the physical disk.
Free	Amount of free space on the physical disk, regardless of initialized or not.
Unavailable	Amount of unavailable space on the physical disk.
Failed	Amount of failed space on the physical disk.

Displaying Chunklet Usage Information

➡To view physical disk chunklet usage information, select **Chunklet Usage** from the filtering list. The chunklet usage information appears as follows:



ID	Cage	Position	Device Type	Device Speed (K)	State	Total Chunklets	Normal Used OK	Normal Used Failed	Normal Unused Free	Normal Unused Uninit	Normal Unused Unavailable	Normal Unused Failed	Spare Used OK	Spare Used Failed	Spare Unused Free	Spare Unused Uninit	Spare Unused Failed
0	cage0	0:0:0	NL	7	● Normal	2793	0	0	2231	0	0	0	0	0	562	0	0
1	cage0	0:3:0	FC	10	● Normal	545	100	0	308	0	0	0	0	0	137	0	0
2	cage0	0:4:0	NL	7	● Normal	2793	0	0	2231	0	0	0	0	0	562	0	0
3	cage0	0:7:0	FC	10	● Normal	545	100	0	309	0	0	0	0	0	136	0	0
4	cage0	0:8:0	NL	7	● Normal	2793	0	0	2231	0	0	0	0	0	562	0	0
5	cage0	0:11:0	FC	10	● Normal	545	100	0	309	0	0	0	0	0	136	0	0
6	cage0	0:12:0	NL	7	● Normal	2793	0	0	2231	0	0	0	0	0	562	0	0
7	cage0	0:15:0	FC	10	● Normal	545	100	0	309	0	0	0	0	0	136	0	0
						13352	400	0	10159	0	0	0	0	0	2793	0	0

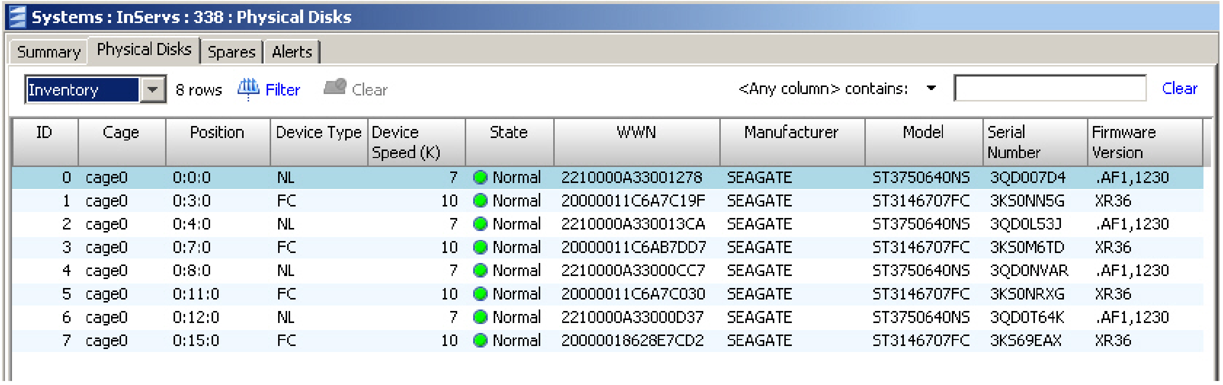
The following information is displayed:

Column	Description
ID	Physical disk ID, as assigned by the system. Physical disks are numbered contiguously during system installation beginning with 0.
Cage	The drive cage in which the disk resides.
Position	Location of the disk in the format: **N**:**S**:**P** (**N**ode:**S**lot:**P**ort).
Device Type	Indicates whether a physical disk is a Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**) drive.
Device Speed	Speed of the specified disk. (RPM)
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
State	State of the disk as identified by the kernel. See **Error! Hyperlink reference not valid.**.
Total Chunklets	Number of chunklets on the physical disk, excluding those reserved by the system, such as for the TOC.
Normal Used OK	Number of chunklets allocated to logical disks and containing data that is currently accessible to the system.
Normal Used Failed	Number of chunklets allocated to logical disks and containing data but currently inaccessible because they have failed.
Normal Unused Free	Number of chunklets currently free and available for use by logical disks.
Normal Unused Init	Number of chunklets being cleaned. A chunklet that is clean has been set to all zeros, and therefore does not contain any data.
Normal Unused Unavailable	Number of unavailable chunklets.
Normal Unused Failed	Number of initialized but unallocated chunklets that do not contain data and have failed.
Spare Used OK	Number of chunklets currently used for sparing and containing data that is accessible by the system.
Spare Used Failed	Number of chunklets used for sparing but containing data that is currently inaccessible to the system because they have failed.

Spare Unused Free	Number of chunklets currently free and available for use, but only as spares.
Spare Unused Uninit	Number of spare chunklets being cleaned. A chunklet that is clean has been set to all zeros, and therefore does not contain any data.
Spare Unused Failed	Number of uninitialized chunklets reserved as spares but currently unusable because they have failed.

Displaying Inventory Information

➡ To view physical disk inventory information, select **Inventory** from the filtering list. The inventory information appears as follows:



ID	Cage	Position	Device Type	Device Speed (K)	State	WWN	Manufacturer	Model	Serial Number	Firmware Version
0	cage0	0:0:0	NL	7	● Normal	2210000A33001278	SEAGATE	ST3750640NS	3QD007D4	.AF1,1230
1	cage0	0:3:0	FC	10	● Normal	20000011C6A7C19F	SEAGATE	ST3146707FC	3KS0NN5G	XR36
2	cage0	0:4:0	NL	7	● Normal	2210000A330013CA	SEAGATE	ST3750640NS	3QD0L53J	.AF1,1230
3	cage0	0:7:0	FC	10	● Normal	20000011C6AB7DD7	SEAGATE	ST3146707FC	3KS0M6TD	XR36
4	cage0	0:8:0	NL	7	● Normal	2210000A33000CC7	SEAGATE	ST3750640NS	3QD0NVAR	.AF1,1230
5	cage0	0:11:0	FC	10	● Normal	20000011C6A7C030	SEAGATE	ST3146707FC	3KS0NRXG	XR36
6	cage0	0:12:0	NL	7	● Normal	2210000A33000D37	SEAGATE	ST3750640NS	3QD0T64K	.AF1,1230
7	cage0	0:15:0	FC	10	● Normal	20000018628E7CD2	SEAGATE	ST3146707FC	3KS69EAX	XR36

The following information is displayed:

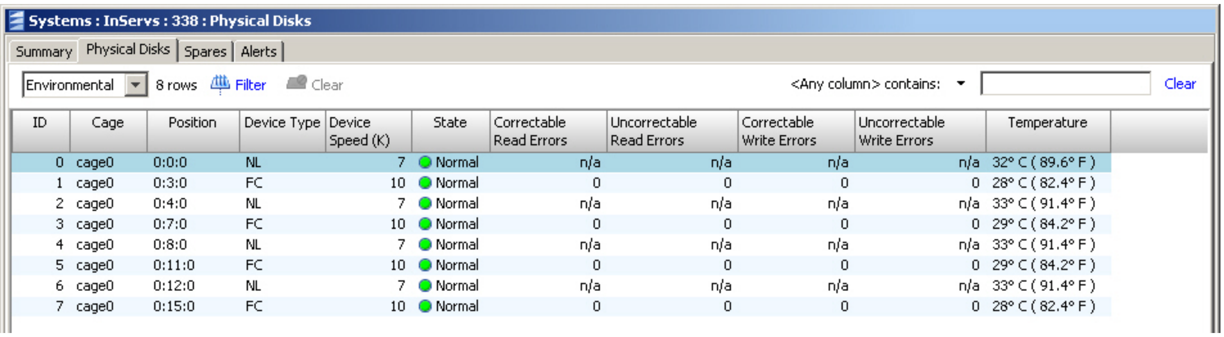
Column	Description
ID	Physical disk ID, as assigned by the system. Physical disks are numbered contiguously during system installation beginning with 0.
Cage	The drive cage in which the disk resides.
Position	Location of the disk in the format: **N**:**S**:**P** (**N**ode:**S**lot:**P**ort).
Device Type	Indicates whether a physical disk is a Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**) drive.
Device Speed	Speed of the specified disk. (RPM)

Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.

State	State of the disk as identified by the kernel. See **Error! Hyperlink reference not valid.**.
WWN	The World Wide Name (WWN) assigned to the disk.
Manufacturer	Name of the disk manufacturer (for example, **SEAGATE**).
Model	Disk model number.
Serial Number	Disk manufacturer's serial number.
Firmware Version	Disk manufacturer's firmware revision tracking string.

Displaying Environmental Information

➡ To view physical disks' environmental information, select **Environmental** from the filtering list. The physical disks' environmental information appears as follows:



ID	Cage	Position	Device Type	Device Speed (K)	State	Correctable Read Errors	Uncorrectable Read Errors	Correctable Write Errors	Uncorrectable Write Errors	Temperature
0	cage0	0:0:0	NL	7	● Normal	n/a	n/a	n/a	n/a	32° C (89.6° F)
1	cage0	0:3:0	FC	10	● Normal	0	0	0	0	28° C (82.4° F)
2	cage0	0:4:0	NL	7	● Normal	n/a	n/a	n/a	n/a	33° C (91.4° F)
3	cage0	0:7:0	FC	10	● Normal	0	0	0	0	29° C (84.2° F)
4	cage0	0:8:0	NL	7	● Normal	n/a	n/a	n/a	n/a	33° C (91.4° F)
5	cage0	0:11:0	FC	10	● Normal	0	0	0	0	29° C (84.2° F)
6	cage0	0:12:0	NL	7	● Normal	n/a	n/a	n/a	n/a	33° C (91.4° F)
7	cage0	0:15:0	FC	10	● Normal	0	0	0	0	28° C (82.4° F)

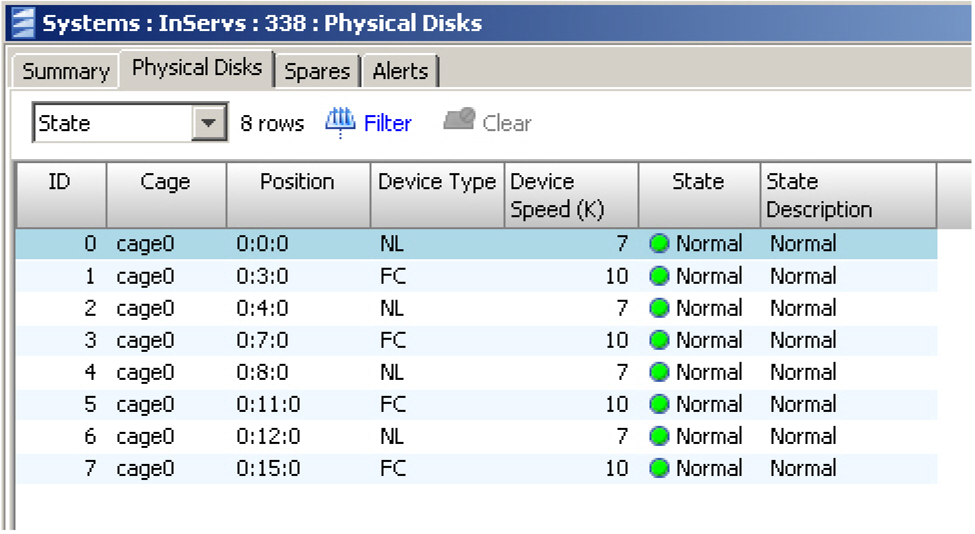
The following information is displayed:

Column	Description
ID	Physical disk ID, as assigned by the system. Physical disks are numbered contiguously during system installation beginning with 0.
Cage	The drive cage in which the disk resides.
Position	Location of the disk in the format: **N**:**S**:**P** (**N**ode:**S**lot:**P**ort).
Device Type	Indicates whether a physical disk is a Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**) drive.

Device Speed	Speed of the specified disk. (RPM)
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
State	State of the disk as identified by the kernel. See **Error! Hyperlink reference not valid.**.
Correctable Read Errors	Identified correctable read errors.
Uncorrectable Read Errors	Identified uncorrectable read errors.
Correctable Write Errors	Identified correctable write errors.
Uncorrectable Write Errors	Identified uncorrectable write errors.
Temperature	Internal temperature of the disk.

Displaying State Information

➜To view physical disk state information, select **State** from the filtering list. The physical disk state information appears as follows:



ID	Cage	Position	Device Type	Device Speed (K)	State	State Description
0	cage0	0:0:0	NL	7	● Normal	Normal
1	cage0	0:3:0	FC	10	● Normal	Normal
2	cage0	0:4:0	NL	7	● Normal	Normal
3	cage0	0:7:0	FC	10	● Normal	Normal
4	cage0	0:8:0	NL	7	● Normal	Normal
5	cage0	0:11:0	FC	10	● Normal	Normal
6	cage0	0:12:0	NL	7	● Normal	Normal
7	cage0	0:15:0	FC	10	● Normal	Normal

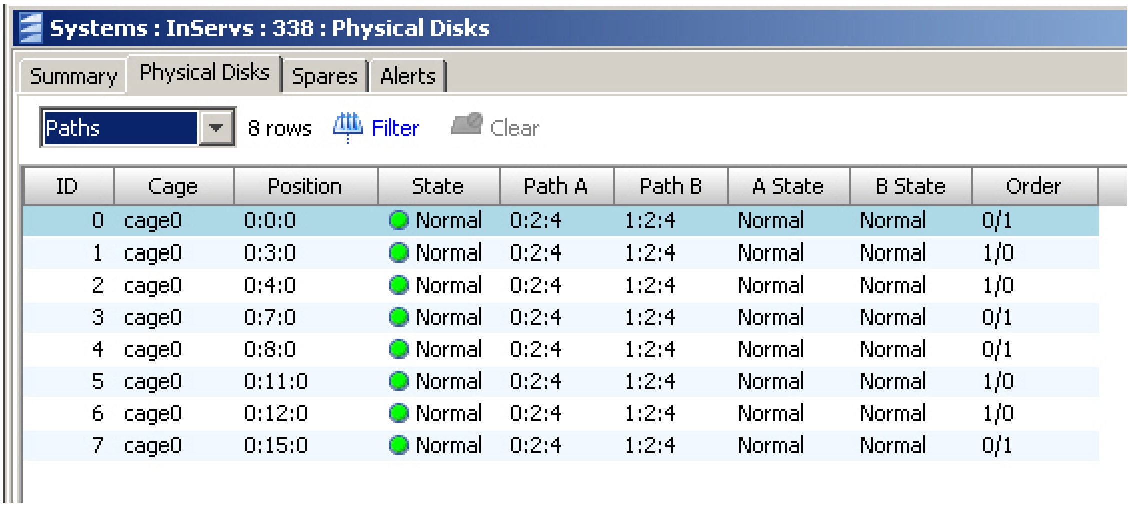
The following information is displayed:

Column	Description
ID	Physical disk ID, as assigned by the system. Physical disks are numbered contiguously during system installation beginning with 0.
Cage	The drive cage in which the disk resides.
Position	Location of the disk in the format: **N**:**S**:**P** (**N**ode:**S**lot:**P**ort).
Device Type	Indicates whether a physical disk is a Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**) drive.
Device Speed	Speed of the specified disk. (RPM)
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
State	State of the disk as identified by the kernel. See **Error! Hyperlink reference not valid.**.
State Description	Description of the drive state.

Displaying Paths Information

Note: Paths information is available for display for systems using InForm OS version 2.3.1 and later.

➡To view physical disks' paths information, select **Paths** from the filtering list. The physical disks' paths information appears as follows:



ID	Cage	Position	State	Path A	Path B	A State	B State	Order
0	cage0	0:0:0	● Normal	0:2:4	1:2:4	Normal	Normal	0/1
1	cage0	0:3:0	● Normal	0:2:4	1:2:4	Normal	Normal	1/0
2	cage0	0:4:0	● Normal	0:2:4	1:2:4	Normal	Normal	1/0
3	cage0	0:7:0	● Normal	0:2:4	1:2:4	Normal	Normal	0/1
4	cage0	0:8:0	● Normal	0:2:4	1:2:4	Normal	Normal	0/1
5	cage0	0:11:0	● Normal	0:2:4	1:2:4	Normal	Normal	1/0
6	cage0	0:12:0	● Normal	0:2:4	1:2:4	Normal	Normal	1/0
7	cage0	0:15:0	● Normal	0:2:4	1:2:4	Normal	Normal	0/1

The following information is displayed:

Column	**Description**
ID	Physical disk ID, as assigned by the system. Physical disks are numbered contiguously during system installation beginning with 0.
Cage	The drive cage in which the disk resides.
Position	Location of the disk in the format: **N**:**S**:**P** (**N**ode:**S**lot:**P**ort).
State	State of the disk as identified by the kernel. See **Error! Hyperlink reference not valid.**.
Path A	The port location of the physical disk's A port in **<node>:<slot>:<port>** format.
Path B	The port location of the physical disk's B port in **<node>:<slot>:<port>** format.
A State	The state of the A port; **Normal**, **Degraded**, **New**, or **Failed**.
B State	The state of the B port; **Normal**, **Degraded**, **New**, or **Failed**.
Order	Displays the order of which node takes over if the primary node fails. For a two node system, displays the primary/secondary path. For a four node system, displays the primary/secondary/third/fourth path.

See also:

- Viewing Physical Disks
- System and Component Status Icons

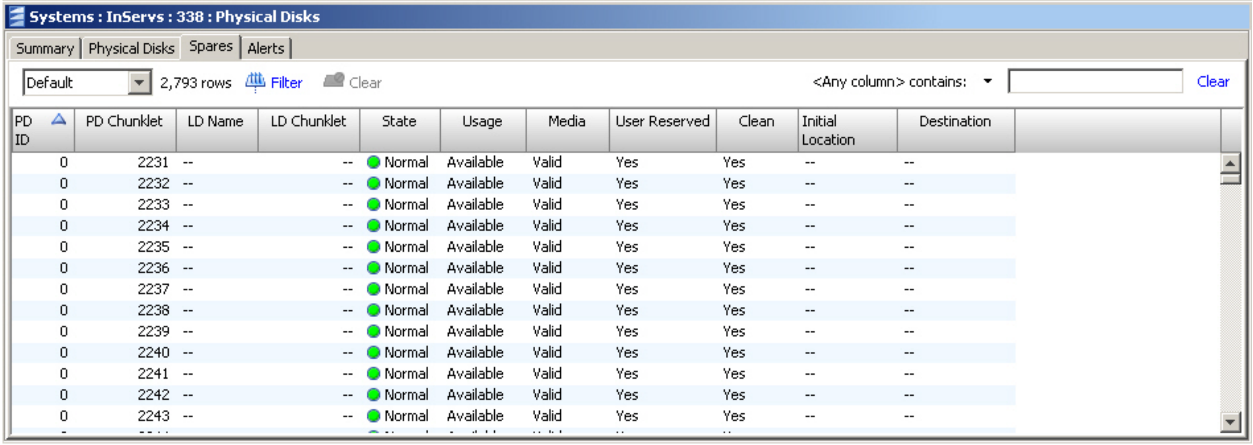
Viewing the Physical Disks Spares Tab

Note: In order to view the **Spares** tab, you must enable spares information in preferences. See Setting Global Preferences.

To view the physical disks **Spares** tab:

1. Access the **Physical Disks** screen.
2. Click the **Spares** tab.

The **Spares** tab appears as follows:



Default 2,793 rows

PD ID	PD Chunklet	LD Name	LD Chunklet	State	Usage	Media	User Reserved	Clean	Initial Location	Destination
0	2231	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2232	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2233	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2234	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2235	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2236	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2237	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2238	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2239	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2240	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2241	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2242	--	--	● Normal	Available	Valid	Yes	Yes	--	--
0	2243	--	--	● Normal	Available	Valid	Yes	Yes	--	--

The following information is displayed:

Column	Description
PD ID	Physical disk ID, as assigned by the system. Physical disks are numbered contiguously during system installation beginning with 0.
PD Chunklet	Chunklet ID, which indicates the location of the chunklet on the physical disk. Chunklets are numbered contiguously beginning with 0
LD Name	Name of the logical disk that is using the spare chunklet.
LD Chunklet	The position of the chunklet in the logical disk.
State	State of the chunklet as identified by the kernel. See System and Component Status Icons.
Usage	Indicates whether the chunklet is reserved by a logical disk or available for use.

Media	Current status of the physical disk media for the chunklet (**Valid** or **Failed**).
User Reserved	The spare status of the chunklet. **Yes** indicates the chunklet is reserved as a spare and **No** indicates a free chunklet that has been selected by the system as a spare.
Clean	Clean status of the chunklet. **Yes** indicates that the chunklet is free of data and ready for use. **No** indicates that it is currently in use, and **Cleaning** denotes that the chunklet is being cleaned of all data (reset to all zeros).
Initial Location	Location of the chunklet prior to relocation, expressed as <PD ID> **:** <chunklet ID>.
Destination	The destination of the chunklet during relocation, expressed as <PD ID> **:** <chunklet ID>.

See also:

Viewing Physical Disks

System and Component Status Icons

Setting Global Preferences

Viewing the Physical Disks Alerts Tab

To view the physical disks **Alerts** tab:

1. Access the **Physical Disks** screen.
2. Click the **Alerts** tab.

The **Alerts** tab displays physical disk-related alerts for the system. The information displayed in the physical disks **Alerts** tab is identical to the information contained in the systems **Alerts** tab.

- The **Alerts** tab displays only physical disk-related alerts.
- See Viewing System Alerts.

See also:

Viewing Physical Disks

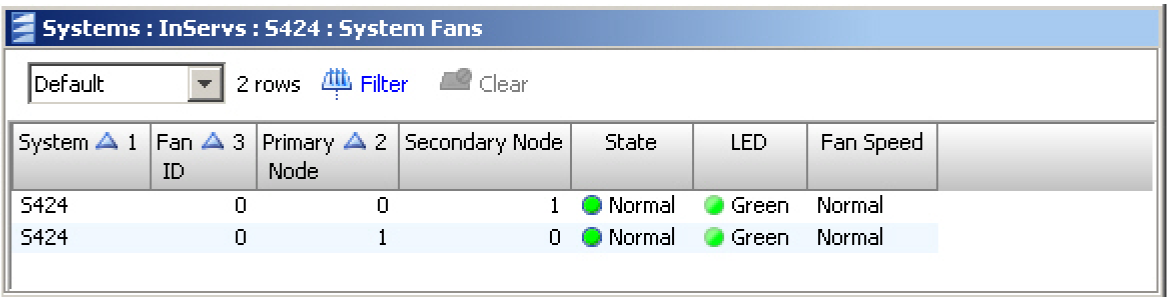
Viewing System Alerts

Viewing System Fans

To view information about system fans:

1. Click **Systems** in the Manager Pane.
2. In the Management Tree, select **Sysetm Fans** under the system whose physical disk information you wish to view.

The System Fans screen appears as follows:



System △ 1	Fan △ 3 ID	Primary △ 2 Node	Secondary Node	State	LED	Fan Speed
S424	0	0	1	● Normal	● Green	Normal
S424	0	1	0	● Normal	● Green	Normal

The following information is displayed:

Column	Description
System	The InServ Storage Server name.
Fan ID	Fan ID, as assigned by the system.
Primary Node	Node that has primary control over the fan.
Secondary Node	Node that has secondary control over the fan.
State	Current state of the fan. See System and Component Status Icons.
LED	Color of the fan LED.
Fan Speed	Current fan speed.

See also:

Manager Pane

Management Tree

System and Component Status Icons

Working with the Host Manager

Storage servers automatically detect new physically connected host paths and display their World-Wide Name (WWN) (for Fibre Channel ports) or iSCSI Name (for iSCSI ports) in the InForm Management Console. However, you can also use the InForm Management Console to add new WWNs or iSCSI names for unestablished host paths and assign them to a host before they are physically connected. This allows a "plug-and-play" functionality that avoids the need for manual reconfiguration after establishing new host paths.

The **Host Manager** allows you to perform the following:

View Host Information

Create, Edit, and Remove Hosts

Create, Edit, and Remove Host Sets

Note: If you are a domain user, only information within the domain(s) you have access to, will be visible.

If you are a domain user, you can perform any host task via the **Domains** node in the management tree. The information and procedures when working in the **Domains** node are identical to those under the **InServs** node, except information is filtered by domain.

See also:

Manager Pane

Management Tree

Viewing Hosts

The **Host Manager** allows you to view information summary and detail information about hosts for all connected systems and a single system's hosts. Additionally, you can also view information about host paths and host sets.

Overview of All Hosts

Overview of a System's Hosts

Viewing Host Information

Viewing Paths

Viewing Unassigned Paths

Viewing Host Sets

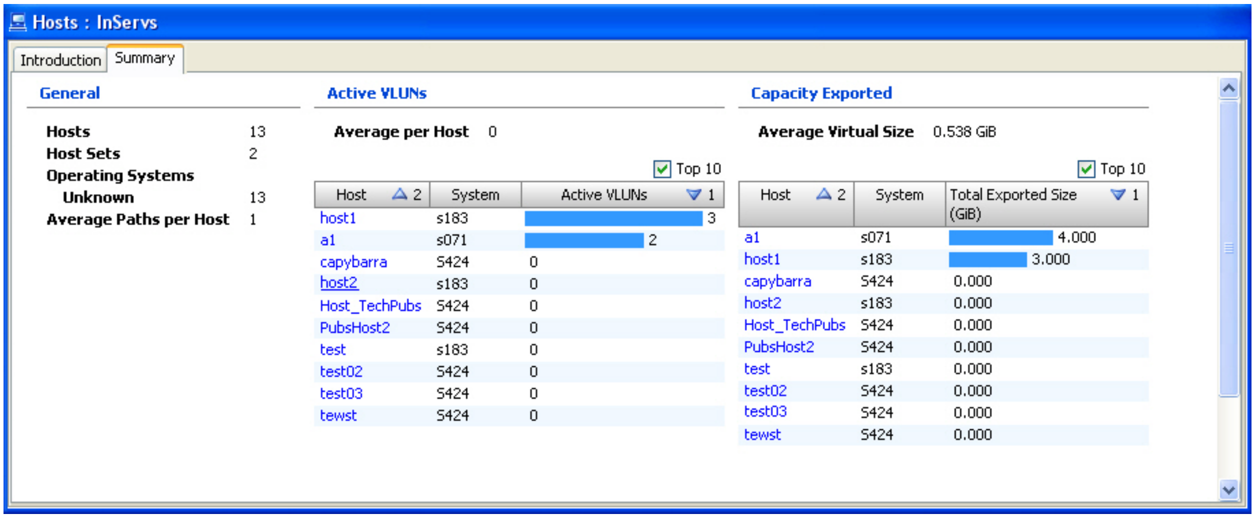
Viewing Host Set Details

Overview of All Hosts

To display an overview of hosts in all connected systems:

1. In the Manager pane, click **Hosts**.
2. In the Management tree, click **InServs**.
3. Click the **Summary** tab.

The overview appears as follows:



General

Hosts	13
Host Sets	2
Operating Systems	
Unknown	13
Average Paths per Host	1

Active VLUNs

Average per Host 0

☑ Top 10

Host △ 2	System	Active VLUNs ▽ 1
host1	s183	3
a1	s071	2
capybarra	S424	0
host2	s183	0
Host_TechPubs	S424	0
PubsHost2	S424	0
test	s183	0
test02	S424	0
test03	S424	0
tewst	S424	0

Capacity Exported

Average Virtual Size 0.538 GiB

☑ Top 10

Host △ 2	System	Total Exported Size (GiB) ▽ 1
a1	s071	4.000
host1	s183	3.000
capybarra	S424	0.000
host2	s183	0.000
Host_TechPubs	S424	0.000
PubsHost2	S424	0.000
test	s183	0.000
test02	S424	0.000
test03	S424	0.000
tewst	S424	0.000

The following information is provided:

Group	Field	Description
General	**Hosts**	The total number of hosts.
	Host Sets	The total number of host sets.
	Operating Systems	Provides a breakdown of operating systems. If Host Explorer is not running, this field displays **Unknown**.
	Average Paths per Host	The average number of paths per host.
Active VLUNs	**Average per Host**	The average number of VLUNs per host.
	Top 10	Select to display only the top ten active VLUNs.
	Column	**Description**

	Host	The host name. Each name listed is a link to the Host screen.
	System	The system on which the host resides.
	Active VLUNs	The number of active VLUNs.
Capacity Exported	**Average Virtual Size**	The average virtual size in GiB.
	Top 10	Select to display only the top ten hosts with the greatest capacity exported.
	Column	**Description**
	Host	The host name. Each name listed is a link to the Host screen.
	System	The system where the export originated.
	Total Exported Size	The total exported size in GiB.

See also:

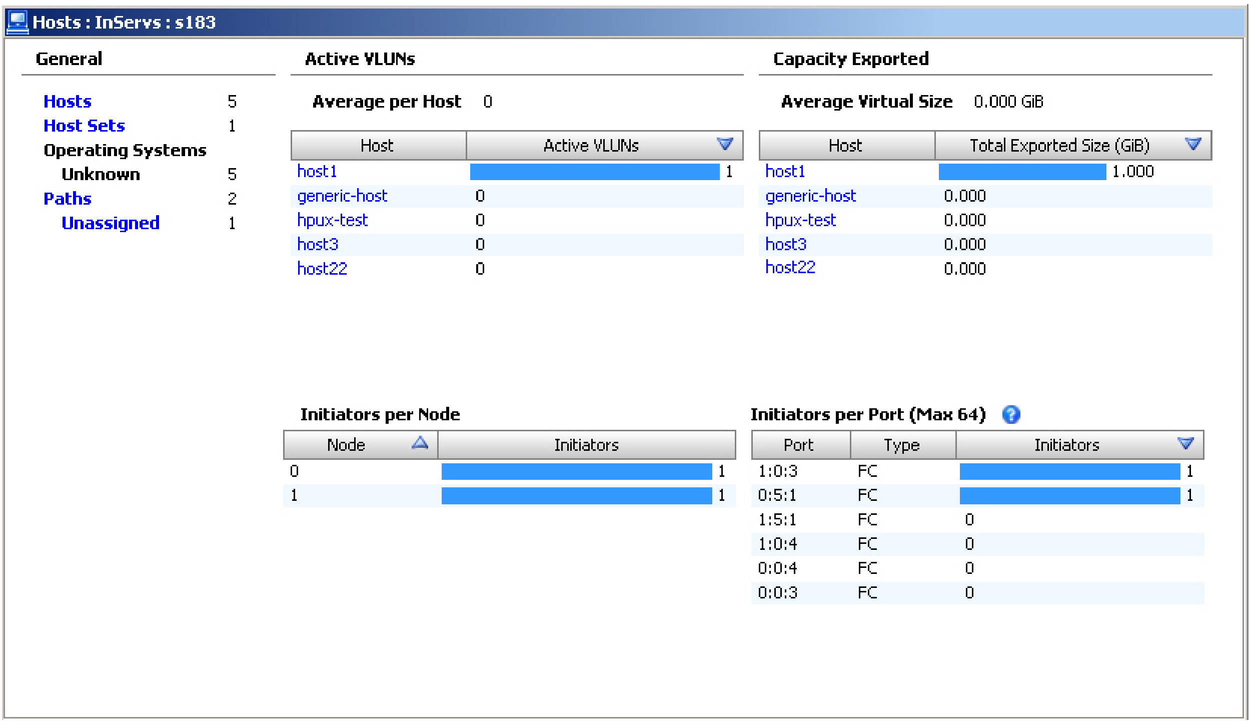
- Manager Pane
- Management Tree
- Overview of a System's Hosts
- Viewing Host Information

Overview of a System's Hosts

To access the overview of a single system's hosts:

1. In the Manager pane, click **Hosts**.
2. In the Management tree, click the InServ Storage Server that contains the hosts you wish to view.

The systems hosts overview appears as follows:



Hosts : InServs : s183

General

Hosts	5
Host Sets	1
Operating Systems	
Unknown	5
Paths	2
Unassigned	1

Active VLUNs

Average per Host 0

Host	Active VLUNs
host1	1
generic-host	0
hpux-test	0
host3	0
host22	0

Capacity Exported

Average Virtual Size 0.000 GiB

Host	Total Exported Size (GiB)
host1	1.000
generic-host	0.000
hpux-test	0.000
host3	0.000
host22	0.000

Initiators per Node

Node	Initiators
0	1
1	1

Initiators per Port (Max 64)

Port	Type	Initiators
1:0:3	FC	1
0:5:1	FC	1
1:5:1	FC	0
1:0:4	FC	0
0:0:4	FC	0
0:0:3	FC	0

The following information is provided:

Group	Field	Description
General	**Hosts**	The total number of hosts. This is also a link to the Host screen.
	Host Sets	The total number of host sets. This is also a link to the Host Sets summary screen.
	Operating Systems	Provides a breakdown of operating systems. If Host Explorer is not running, this field displays **Unknown**.
	Paths	Total number of paths. This is also a link to the Paths screen.
	Unassigned	Total number of unassigned hosts. This is also a link to the Unassigned paths screen.
Active VLUNs	**Average per Host**	The average number of active VLUNs.
	Host	The host name. Each name listed is a link to the Host screen.
	Active VLUNs	The number of active VLUNs per host.

Initiators per Node	**Node**	The node number.
	Initiators	The number of initiators.
Capacity Exported	**Average Virtual Size**	The average virtual size of exported capacity in GiB.
	Host	The host name. Each name listed is a link to the Host screen.
	Total Exported Size	The exported size per host in GiB.
Initiators per Port	**Port**	The host port location in node:slot:port format.
	Type	The type of host port.
	Initiators	The number of initiators.

See also:

Viewing Host Information

Manager Pane

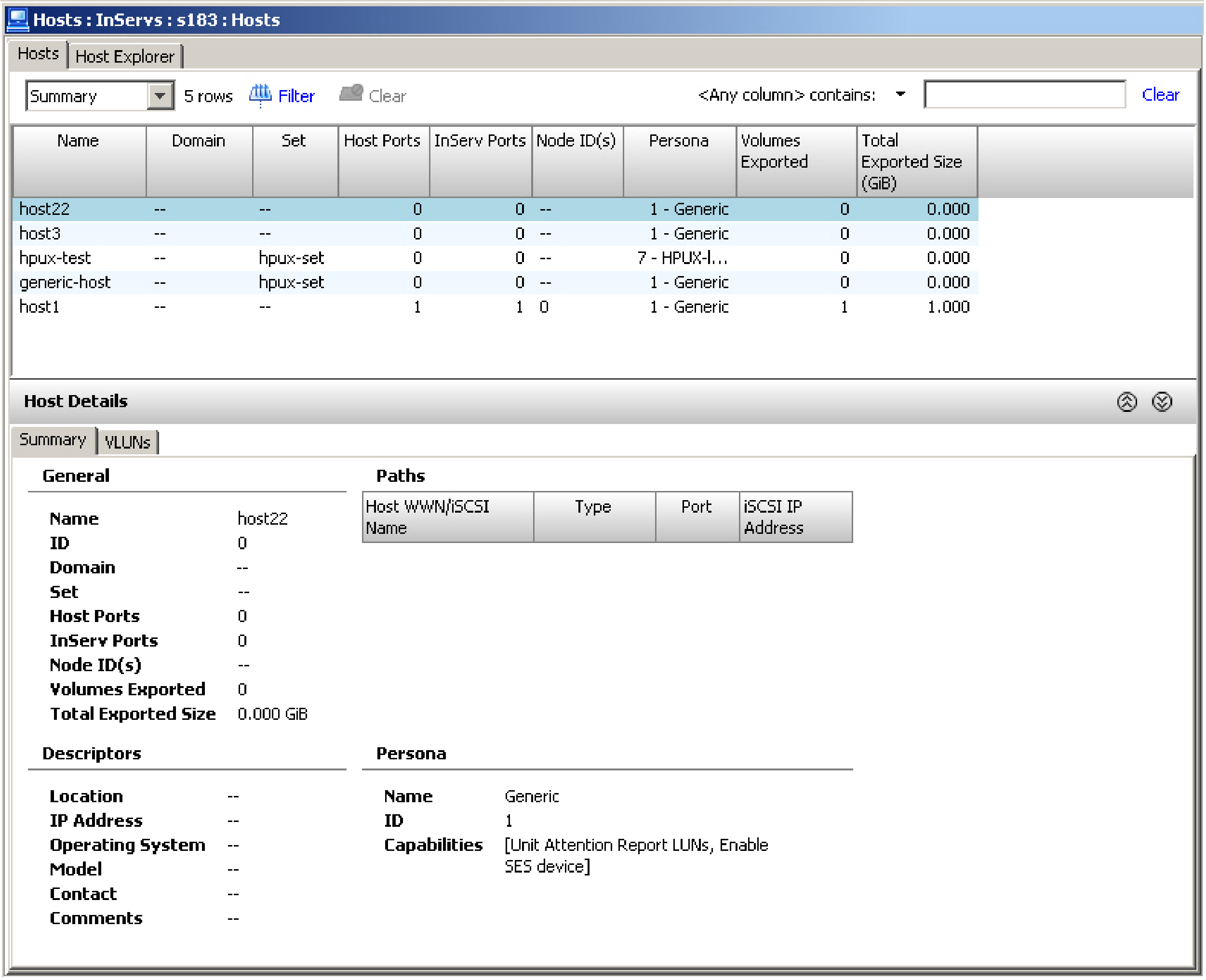
Management Tree

Viewing Host Information

To view more in-depth information about hosts for a single system, perform the following:

1. In the Manager pane, click **Hosts**.
2. In the Management tree, click **Hosts** under the InServ Storage Server that contains the hosts you wish to view.

The Hosts screen appears as follows:


Hosts : InServs : s183 : Hosts
Hosts
Host Explorer
Summary
5 rows
Filter
Clear
<Any column> contains:
Clear
Host Details
Summary
VLUNs

Name	Domain	Set	Host Ports	InServ Ports	Node ID(s)	Persona	Volumes Exported	Total Exported Size (GiB)
host22	--	--	0	0	--	1 - Generic	0	0.000
host3	--	--	0	0	--	1 - Generic	0	0.000
hpux-test	--	hpux-set	0	0	--	7 - HPUX-l...	0	0.000
generic-host	--	hpux-set	0	0	--	1 - Generic	0	0.000
host1	--	--	1	1	0	1 - Generic	1	1.000

General

Name	host22
ID	0
Domain	--
Set	--
Host Ports	0
InServ Ports	0
Node ID(s)	--
Volumes Exported	0
Total Exported Size	0.000 GiB

Paths

Host WWN/iSCSI Name	Type	Port	iSCSI IP Address

Descriptors

Location	--
IP Address	--
Operating System	--
Model	--
Contact	--
Comments	--

Persona

Name	Generic
ID	1
Capabilities	[Unit Attention Report LUNs, Enable SES device]

The Hosts screen is divided into an upper and lower pane. The upper pane provides general information about all hosts in a system. The lower pane provides more detailed information about a specific host as selected in the upper pane.

Upper Pane

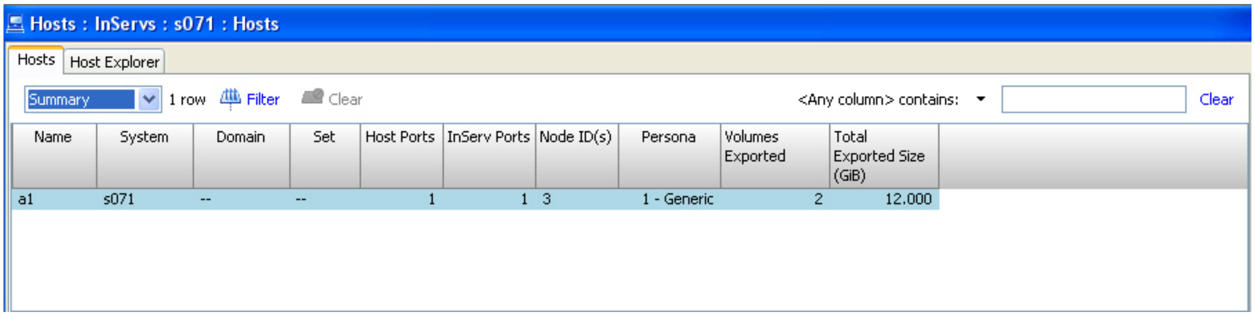
Information in the upper pane is provided on two tabs, **Hosts** and **Host Explorer**.

- Hosts_Tab
- Host_Explorer_Tab

Hosts Tab

The **Hosts** tab can be set to show summary information or descriptor information.

When displaying summary information, the **Hosts** tab appears as follows:



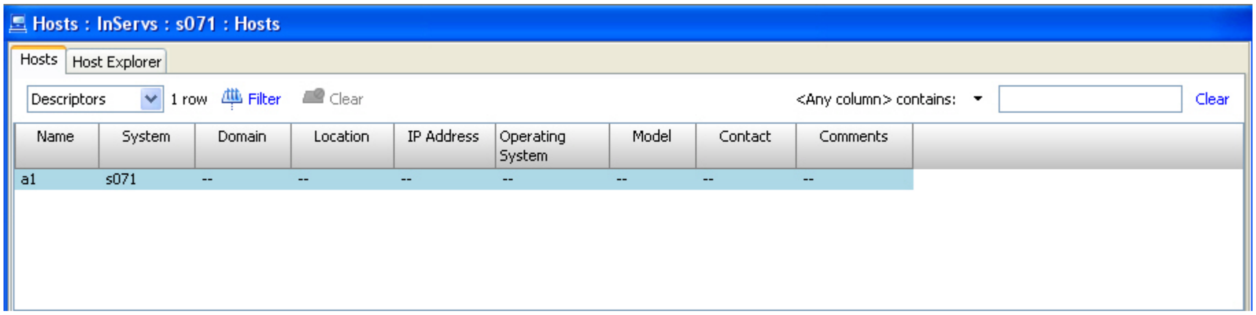
Name	System	Domain	Set	Host Ports	InServ Ports	Node ID(s)	Persona	Volumes Exported	Total Exported Size (GiB)
a1	s071	--	--	1	1	3	1 - Generic	2	12.000

The following summary information is provided:

Column	Description
Name	The host name.
System	The system on which the host resides.
Domain	The domain in which the host resides.
Set	The host set to which the host belongs.
Host Ports	The host port.
InServ Ports	The InServ Storage Server port on which the host is visible.
Node ID(s)	The node(s) connected to the host.
Persona	One of the following host personas: • 1 = Generic; UARepLun, SESLun • 2 = ALUA; UARepLun, RTPG, SESLun • 6 = Generic (legacy) • 7 = HPUX (legacy); VolSetAddr • 8 = AIX (legacy); NACA • 9 = Egenera; SoftInq • 10 = ONTAP (legacy); SoftInq
Volumes Exported	The number of volumes exported from the host.

Total Exported Size	The total size in GiB of exported data.

When displaying descriptor information, the **Hosts** tab appears as follows:


Hosts : InServs : s071 : Hosts
Hosts
Host Explorer
Descriptors
1 row
Filter
Clear
<Any column> contains:
Clear

Name	System	Domain	Location	IP Address	Operating System	Model	Contact	Comments
a1	s071	--	--	--	--	--	--	--

The following descriptor information is provided:

Column	Description
Name	The host name.
System	The system on which the host resides.
Domain	The domain in which the host resides.
Location	The location of the host.
IP Address	The host's IP address.
Operating System	The operating system type.
Model	The model of the host HBA.
Contact	Any contact information.
Comments	Any notes.

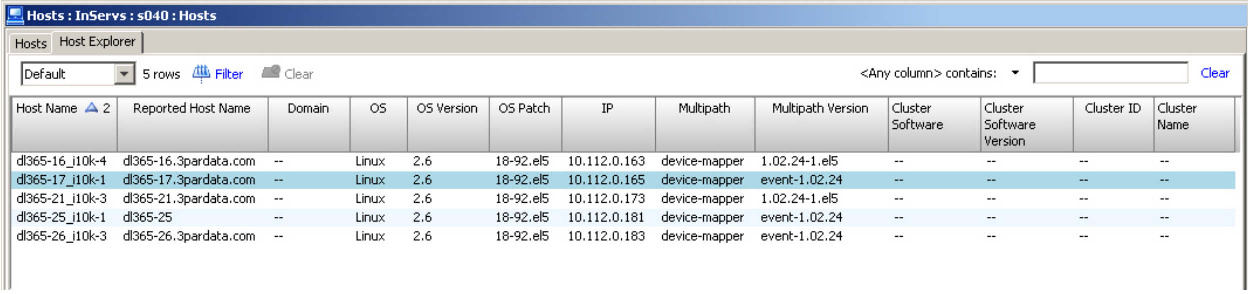
See also:

- VLUN_Details
- Host_Explorer_Details

Host Explorer Tab

Note: The **Host Explorer** tab is displayed for systems running InForm OS 2.3.1 or higher. Additionally, host explorer information is displayed if the host was created from explorer information.

The **Host Explorer** tab appears as follows:



Host Name 2	Reported Host Name	Domain	OS	OS Version	OS Patch	IP	Multipath	Multipath Version	Cluster Software	Cluster Software Version	Cluster ID	Cluster Name
dl365-16_i10k-4	dl365-16.3pardata.com	--	Linux	2.6	18-92.el5	10.112.0.163	device-mapper	1.02.24-1.el5	--	--	--	--
dl365-17_i10k-1	dl365-17.3pardata.com	--	Linux	2.6	18-92.el5	10.112.0.165	device-mapper	event-1.02.24	--	--	--	--
dl365-21_i10k-3	dl365-21.3pardata.com	--	Linux	2.6	18-92.el5	10.112.0.173	device-mapper	1.02.24-1.el5	--	--	--	--
dl365-25_i10k-1	dl365-25	--	Linux	2.6	18-92.el5	10.112.0.181	device-mapper	event-1.02.24	--	--	--	--
dl365-26_i10k-3	dl365-26.3pardata.com	--	Linux	2.6	18-92.el5	10.112.0.183	device-mapper	event-1.02.24	--	--	--	--

The **Host Explorer** tab provides the following information:

Column	Description
Host Name	The host name.
Reported Host Name	The host name reported by the agent.
System Name (not shown)	The system on which the host resides.
Domain	The domain in which the host resides.
OS	The operating system type.
OS Version	The version of the operating system.
OS Patch	The patch level of the operating system.
IP Address	The host's IP address.
Multipath	The multipathing software in use on the host.
Multipath Version	The version of the multipathing software.
Cluster Software	The host clustering software in use on the host.
Cluster Software Version	The version of the host clustering software.

Cluster ID	The host cluster ID.
Cluster Name	The host cluster name.

See also:

Host_Explorer_Details

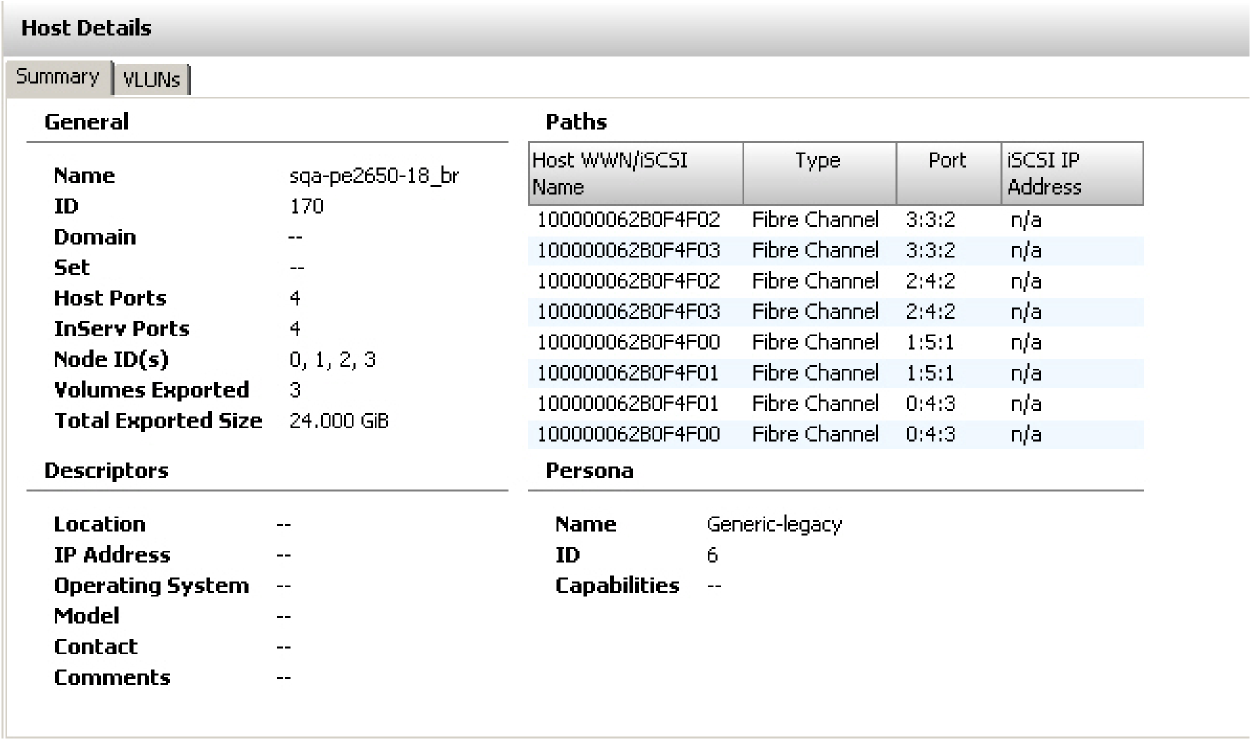
Lower Pane

Information in the lower pane elaborates on specific hosts selected from the upper pane. When selecting a host from the Hosts tab in the upper pane, the lower pane provides two tabs, Summary and VLUNs, which provide summary and VLUN details about the selected host. When selecting a host from the Host Explorer tab, the lower pane displays host explorer details.

- Host_Summary_Details
- VLUN_Details
- Host_Explorer_Details

Host Summary Details

Summary details are displayed in the **Summary**.



General

Name	sqa-pe2650-18_br
ID	170
Domain	--
Set	--
Host Ports	4
InServ Ports	4
Node ID(s)	0, 1, 2, 3
Volumes Exported	3
Total Exported Size	24.000 GiB

Paths

Host WWN/iSCSI Name	Type	Port	iSCSI IP Address
100000062B0F4F02	Fibre Channel	3:3:2	n/a
100000062B0F4F03	Fibre Channel	3:3:2	n/a
100000062B0F4F02	Fibre Channel	2:4:2	n/a
100000062B0F4F03	Fibre Channel	2:4:2	n/a
100000062B0F4F00	Fibre Channel	1:5:1	n/a
100000062B0F4F01	Fibre Channel	1:5:1	n/a
100000062B0F4F01	Fibre Channel	0:4:3	n/a
100000062B0F4F00	Fibre Channel	0:4:3	n/a

Descriptors

Location	--
IP Address	--
Operating System	--
Model	--
Contact	--
Comments	--

Persona

Name	Generic-legacy
ID	6
Capabilities	--

The following information is displayed:

Group	Field	Description
General	**Name**	The host name.
	ID	The host ID.
	Domain	The domain in which the host resides.
	Set	The number of hosts it the host set.
	Host Ports	The host port.
	InServ Ports	The InServ Storage Server port on which the host is visible.
	Node ID(s)	The node(s) connected to the host.
	Volumes Exported	The number of volumes exported from the host.
	Total Exported Size	The total size in GiB of exported data.
Description	**Location**	The location of the host.
	IP Address	The host's IP address.
	Operating System	The operating system type.
	Model	The model of the host HBA.
	Contact	Contact information.
	Comments	Any notes.
Paths	**Column**	**Description**
	Host WWN/iSCSI Name	The host or iSCSI name.

	Type	The host adapter type.
	Port	The InServ Storage Server port on which the host is visible.
	iSCSI IP Address	The iSCSI IP address.
Persona	**Name**	The persona name.
	ID	The persona ID.
	Capabilities	The persona capabilities.

See also:

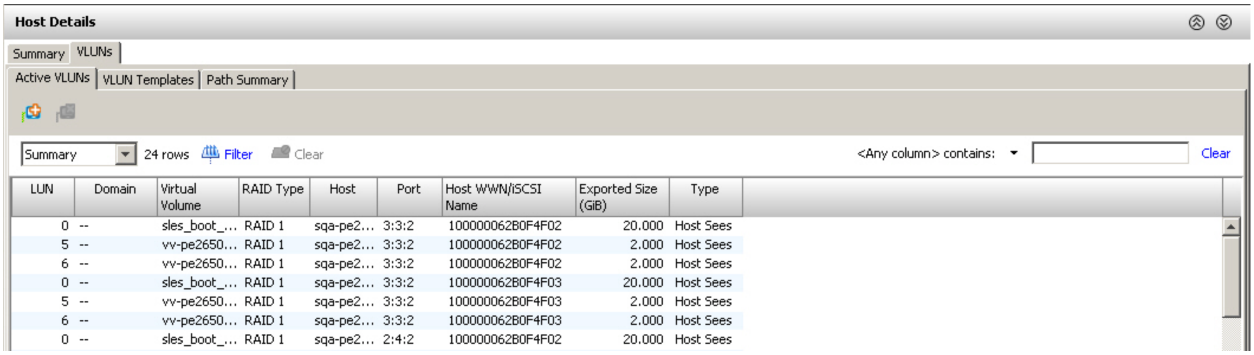
- Hosts_Tab
- VLUN_Details

VLUN Details

VLUN details are displayed on three tabs, **Active VLUNs**, **VLUN Templates**, and **Path Summary**.

Active VLUNs

The **Active VLUNs** tab appears as follows:



LUN	Domain	Virtual Volume	RAID Type	Host	Port	Host WWN/iSCSI Name	Exported Size (GiB)	Type
0	--	sles_boot_...	RAID 1	sqa-pe2...	3:3:2	100000062B0F4F02	20.000	Host Sees
5	--	vv-pe2650...	RAID 1	sqa-pe2...	3:3:2	100000062B0F4F02	2.000	Host Sees
6	--	vv-pe2650...	RAID 1	sqa-pe2...	3:3:2	100000062B0F4F02	2.000	Host Sees
0	--	sles_boot_...	RAID 1	sqa-pe2...	3:3:2	100000062B0F4F03	20.000	Host Sees
5	--	vv-pe2650...	RAID 1	sqa-pe2...	3:3:2	100000062B0F4F03	2.000	Host Sees
6	--	vv-pe2650...	RAID 1	sqa-pe2...	3:3:2	100000062B0F4F03	2.000	Host Sees
0	--	sles_boot_...	RAID 1	sqa-pe2...	2:4:2	100000062B0F4F02	20.000	Host Sees

The following information is provided:

Column	**Description**
System Name (not shown)	The name of the system.
LUN	The exported LUN value.

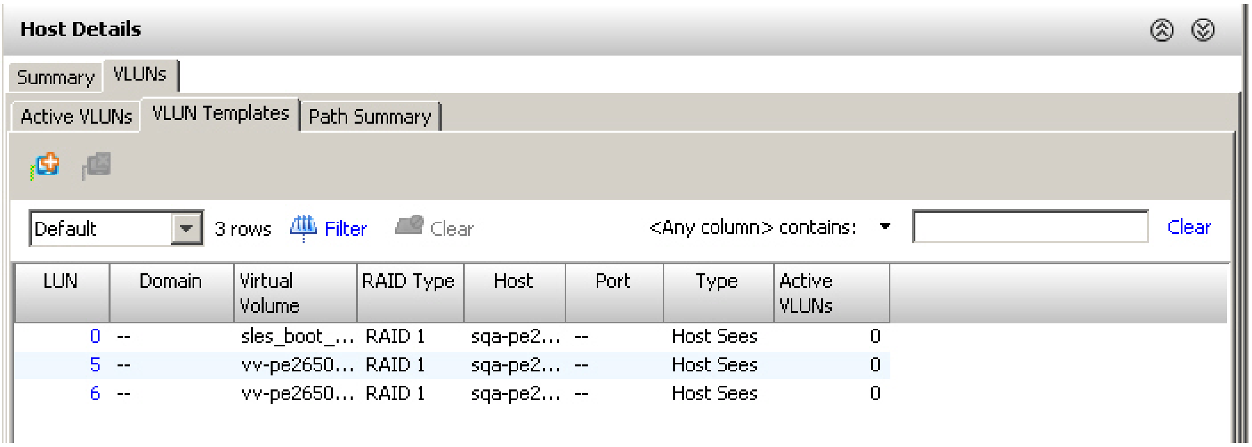
Domain	The domain in which the VLUN belongs.
Virtual Volume	The exported volume.
RAID Type	The volume's RAID type.
Host	The name of the host to which the VLUN is exported.
Port	The port to which the path is connected.
Host WWN/iSCSI Name	The host's World-Wide Name (WWN) or iSCSI name.
Exported Size	The size of the VLUN in GiB.
Type	The VLUN type.

See also:

Hosts_Tab

VLUN Templates

The **VLUN Templates** tab appears as follows:


Host Details
Summary
VLUNs
Active VLUNs
VLUN Templates
Path Summary
Default
3 rows
Filter
Clear
<Any column> contains:
Clear

LUN	Domain	Virtual Volume	RAID Type	Host	Port	Type	Active VLUNs
0	--	sles_boot_...	RAID 1	sqa-pe2...	--	Host Sees	0
5	--	vv-pe2650...	RAID 1	sqa-pe2...	--	Host Sees	0
6	--	vv-pe2650...	RAID 1	sqa-pe2...	--	Host Sees	0

The following information is provided:

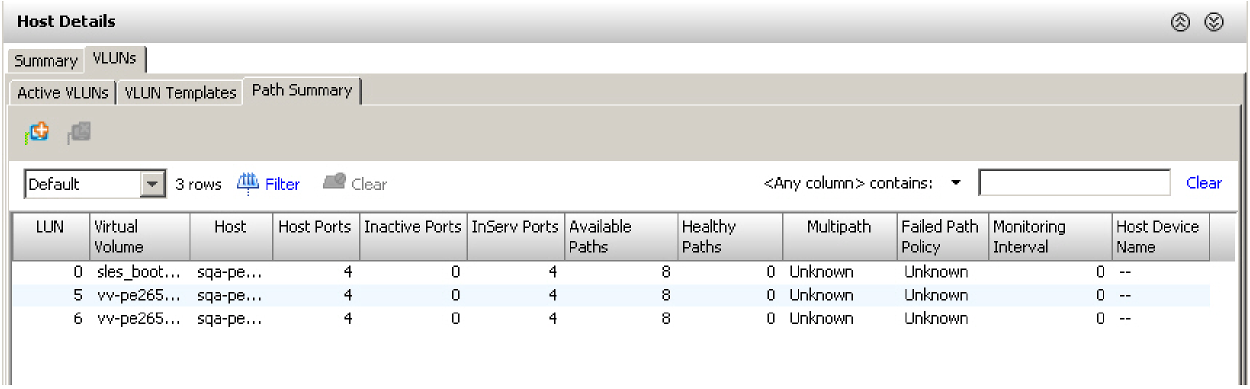
Column	Description
System Name (not shown)	The name of the system.
LUN	The exported LUN value.
Domain	The domain in which the VLUN belongs.
Virtual Volume	The exported volume.
RAID Type	The volume's RAID type.
Host	The name of the host to which the VLUN is exported.
Port	The port to which the path is connected.
Type	The VLUN type.
Active VLUNs	The number of active VLUNs.

See also:

[Hosts_Tab]

Path Summary

The **Path Summary** tab appears as follows:


Host Details
Summary
VLUNs
Active VLUNs
VLUN Templates
Path Summary
Default
3 rows
Filter
Clear
<Any column> contains:
Clear

LUN	Virtual Volume	Host	Host Ports	Inactive Ports	InServ Ports	Available Paths	Healthy Paths	Multipath	Failed Path Policy	Monitoring Interval	Host Device Name
0	sles_boot...	sqa-pe...	4	0	4	8	0	Unknown	Unknown	0	--
5	vv-pe265...	sqa-pe...	4	0	4	8	0	Unknown	Unknown	0	--
6	vv-pe265...	sqa-pe...	4	0	4	8	0	Unknown	Unknown	0	--

The following information is provided:

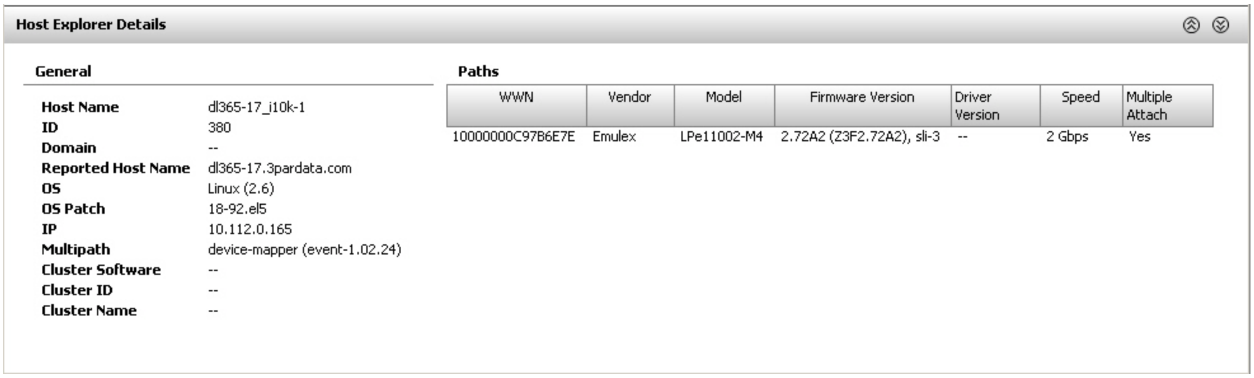
Column	Description
System Name (not shown)	The name of the system.
LUN	The exported LUN value.
Virtual Volume	The exported volume.
Host	The name of the host to which the VLUN is exported.
Inactive Ports	WWNs reported by the host, but not visible to the InServ Storage Server.
InServ Ports	The number of InServ Storage Server ports that can see the host.
Available Paths	The total number of available distinct paths between the host and the InServ Storage Server.
Healthy Paths	The number of paths seen by the InServ Storage Server and reported "good" by the host.
Multipath	The multipathing method in use.
Failed Policy Path	The failed path monitoring method.
Monitoring Interval	The monitoring interval in seconds after which the host checks for failed paths.
Host Device Name	The device name for the selected VLUN on the host.

See also:

Hosts_Tab

Host Explorer Details

The host explorer detail screen in the lower pane provide detailed information about hosts selected from the **Host Explorer** tab in the upper pane. Host explorer details appear as follows:



General

Host Name	dl365-17_i10k-1
ID	380
Domain	--
Reported Host Name	dl365-17.3pardata.com
OS	Linux (2.6)
OS Patch	18-92.el5
IP	10.112.0.165
Multipath	device-mapper (event-1.02.24)
Cluster Software	--
Cluster ID	--
Cluster Name	--

Paths

WWN	Vendor	Model	Firmware Version	Driver Version	Speed	Multiple Attach
10000000C97B6E7E	Emulex	LPe11002-M4	2.72A2 (Z3F2.72A2), sli-3	--	2 Gbps	Yes

The following information is provided:

Group	Field	Description
General	**Host Name**	The host name.
	ID	The host ID.
	Domain	The domain in which the host resides.
	Reported Host Name	The host name reported by the agent.
	OS	The operating system type.
	OS Patch	The patch level of the operating system.
	IP	The host's IP address.
	Multipath	The multipathing software in use on the host.
	Cluster Software	The host clustering software in use on the host.

	Cluster ID	The host cluster ID.
	Cluster Name	The host cluster name.
Paths	**Column**	**Description**
	WWN	The WWN of the host HBA.
	Vendor	The vendor of the host HBA.
	Model	The model of the host HBA.
	Firmware Version	The firmware version on the host HBA.
	Driver Version	The host driver version.
	Speed	The host speed.
	Multiple Attach	Indicates if the host WWN is seen on multiple InServ Storage Server ports.

See also:

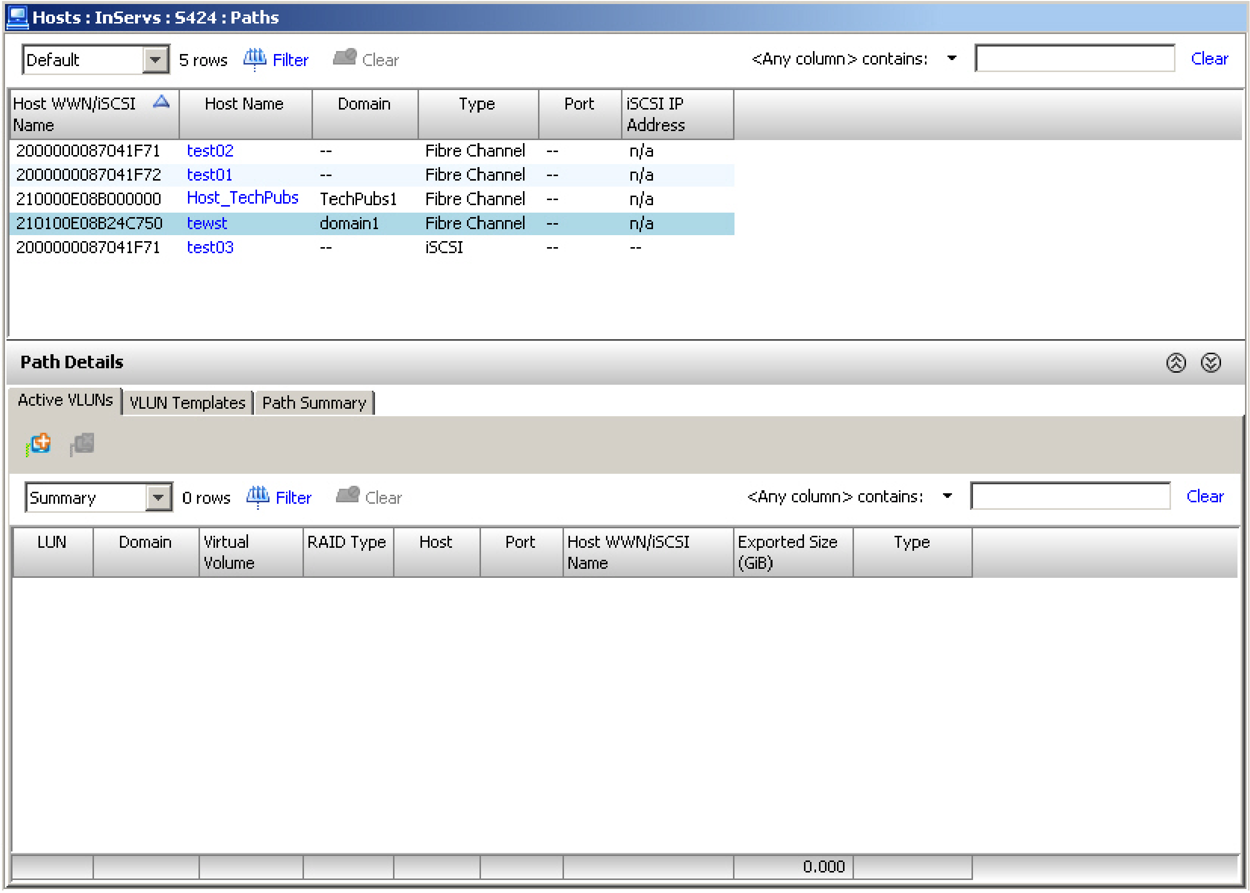
Host_Explorer_Tab

Viewing Paths

To view host paths:

1. In the Manager pane, click **Hosts**.
2. In the Management tree, click **Paths** under the InServ Storage Server that contains the host paths you wish to view.

The Paths screen appears as follows:


Hosts : InServs : S424 : Paths
Default
5 rows
Filter
Clear
<Any column> contains:
Clear
Path Details
Active VLUNs
VLUN Templates
Path Summary
Summary
0 rows
Filter
Clear
<Any column> contains:
Clear

Host WWN/iSCSI Name	Host Name	Domain	Type	Port	iSCSI IP Address
2000000087041F71	test02	--	Fibre Channel	--	n/a
2000000087041F72	test01	--	Fibre Channel	--	n/a
210000E08B000000	Host_TechPubs	TechPubs1	Fibre Channel	--	n/a
210100E08B24C750	tewst	domain1	Fibre Channel	--	n/a
2000000087041F71	test03	--	iSCSI	--	--

LUN	Domain	Virtual Volume	RAID Type	Host	Port	Host WWN/iSCSI Name	Exported Size (GiB)	Type
							0.000	

The Paths screen is divided into an upper pane and a lower pane. The upper pane displays a summary of all host paths in the system. The lower pane displays detailed information about a single host path selected from the upper pane.

Upper_Pane

Lower_Pane

Upper Pane

The upper pane of the Paths screen provides the following information:

Column	Description
Host WWN/iSCSI Name	The host's World-Wide Name (WWN) or iSCSI name.
Host Name	The host name. If no name is displayed, the path is unassigned.
Domain	The domain in which the host resides.

Type	The type of path, **Fibre Channel** or **iSCSI**.
Port	The port to which the path is connected.
iSCSI IP Address	The IP address if an iSCSI path.

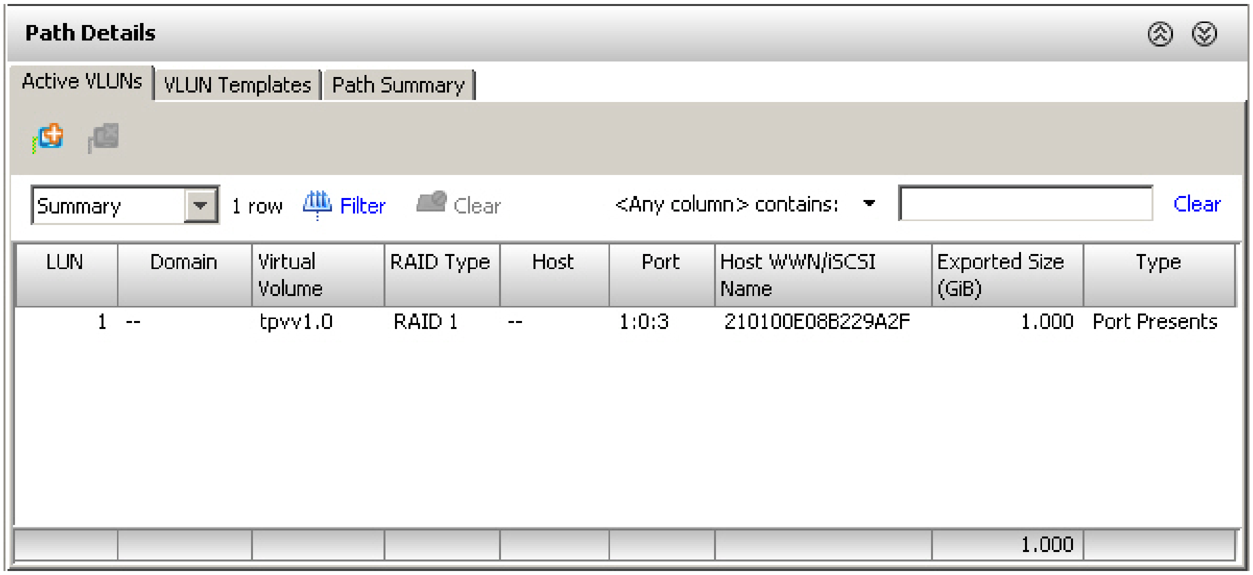
Lower Pane

The lower pane displays detailed information about a single host path selected from the upper pane and is displayed on three tabs.

- Active_VLUNs
- VLUN_Templates
- Path_Summary

Active VLUNs

The **Active VLUNs** tab appears as follows:


Path Details
Active VLUNs
VLUN Templates
Path Summary
Summary
1 row
Filter
Clear
<Any column> contains:
Clear

LUN	Domain	Virtual Volume	RAID Type	Host	Port	Host WWN/iSCSI Name	Exported Size (GiB)	Type
1	--	tpvv1.0	RAID 1	--	1:0:3	210100E08B229A2F	1.000	Port Presents
							1.000	

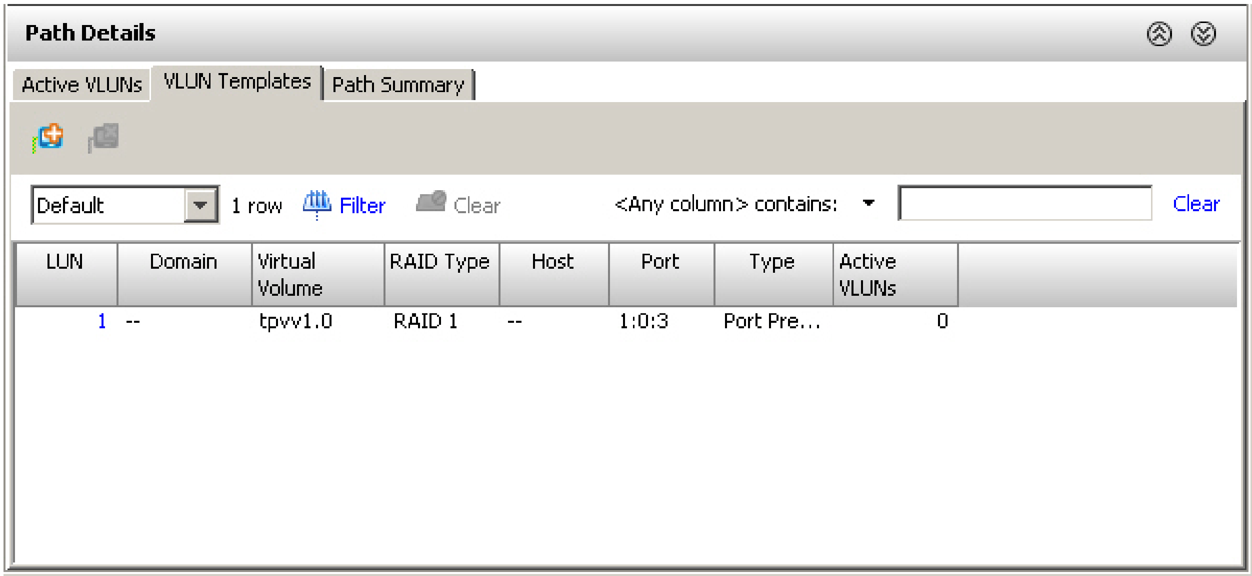
The following information is provided on the **Active VLUNs** tab:

Column	Description
LUN	The exported LUN value.
Domain	The domain in which the VLUN belongs.

Virtual Volume	The exported volume.
RAID Type	The volume's RAID type.
Host	The name of the host to which the VLUN is exported.
Port	The port to which the path is connected.
Host WWN/iSCSI Name	The host's World-Wide Name (WWN) or iSCSI name.
Exported Size	The size of the VLUN in GiB.
Type	The VLUN type.

VLUN Templates

The **VLUN Templates** tab appears as follows:


Path Details
Active VLUNs
VLUN Templates
Path Summary
Default
1 row
Filter
Clear
<Any column> contains:
Clear

LUN	Domain	Virtual Volume	RAID Type	Host	Port	Type	Active VLUNs
1	--	tpvv1.0	RAID 1	--	1:0:3	Port Pre...	0

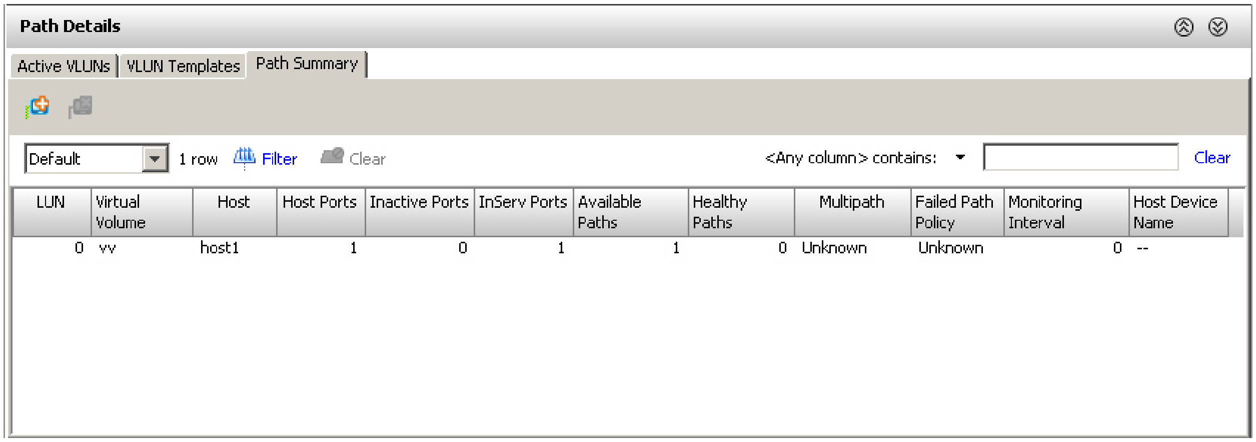
The following information is provided on the **VLUN Templates** tab:

Column	Description
LUN	The exported LUN value.
Domain	The domain in which the VLUN belongs.

Virtual Volume	The exported volume.
RAID Type	The volume's RAID type.
Host	The name of the host to which the VLUN is exported.
Port	The port to which the path is connected.
Type	The VLUN type.
Active VLUNs	The number of active VLUNs.

Path Summary

The **Path Summary** tab appears as follows:


Path Details
Active VLUNs
VLUN Templates
Path Summary
Default
1 row
Filter
Clear
<Any column> contains:
Clear

LUN	Virtual Volume	Host	Host Ports	Inactive Ports	InServ Ports	Available Paths	Healthy Paths	Multipath	Failed Path Policy	Monitoring Interval	Host Device Name
0	vv	host1	1	0	1	1	0	Unknown	Unknown	0	--

The following information is provided on the **Path Summary** tab:

Column	Description
LUN	The exported LUN value.
Virtual Volume	The exported volume.
Host	The name of the host to which the VLUN is exported.
Inactive Ports	WWNs reported by the host, but not visible to the InServ Storage Server.

InServ Ports	The number of InServ Storage Server ports that can see the host.
Available Paths	The total number of available distinct paths between the host and the InServ Storage Server.
Healthy Paths	The number of paths seen by the InServ Storage Server and reported "good" by the host.
Multipath	The multipathing method in use.
Failed Policy Path	The failed path monitoring method.
Monitoring Interval	The monitoring interval in seconds after which the host checks for failed paths.
Host Device Name	The device name for the selected VLUN on the host.

See also:

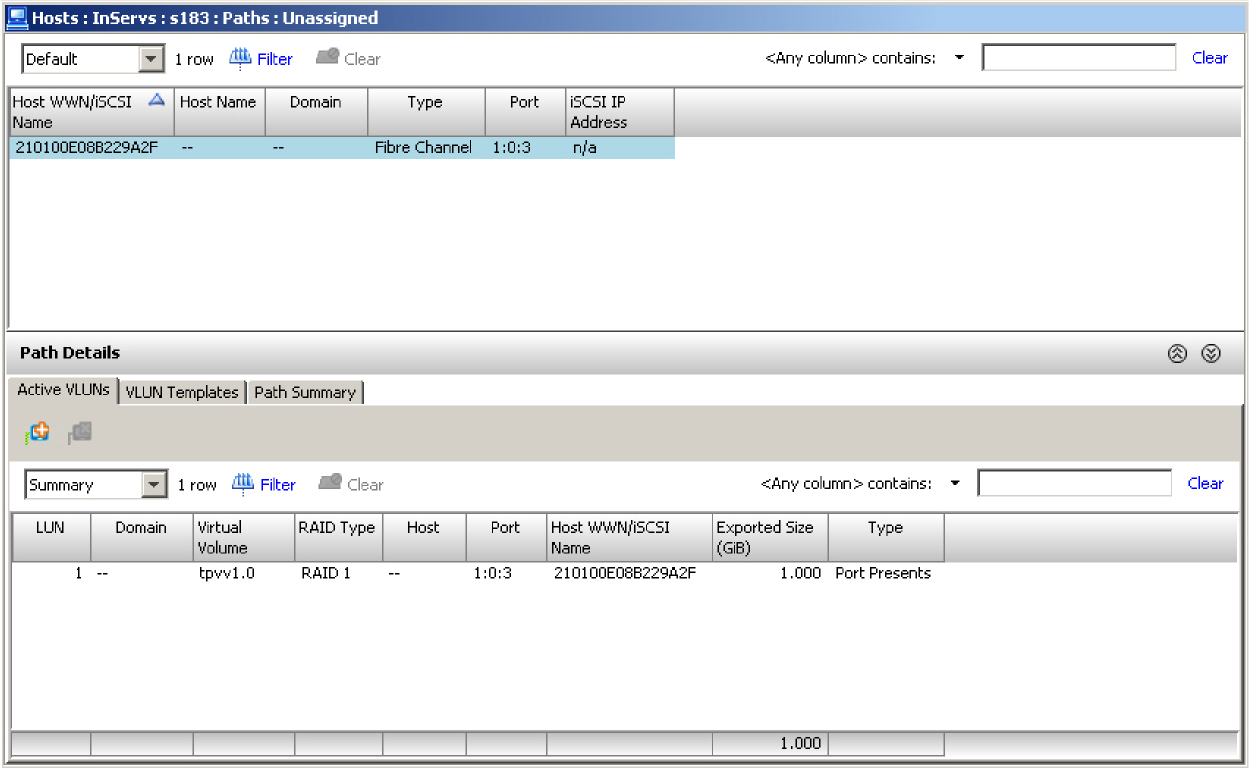
- Hosts_Manager
- Management Tree
- Viewing Unassigned Paths

Viewing Unassigned Paths

To view unassigned host paths:

1. In the Manager pane, click **Hosts**.
2. In the Management tree, click **Unassigned** under the **Paths** node of the InServ Storage Server that contains the unassigned host paths you wish to view.

The Unassigned paths screen appears as follows:


Hosts : InServs : s183 : Paths : Unassigned
Default
1 row
Filter
Clear
<Any column> contains:
Clear
Path Details
Active VLUNs
VLUN Templates
Path Summary
Summary
1 row
Filter
Clear
<Any column> contains:
Clear

Host WWN/iSCSI Name	Host Name	Domain	Type	Port	iSCSI IP Address
210100E08B229A2F	--	--	Fibre Channel	1:0:3	n/a

LUN	Domain	Virtual Volume	RAID Type	Host	Port	Host WWN/iSCSI Name	Exported Size (GiB)	Type
1	--	tpvv1.0	RAID 1	--	1:0:3	210100E08B229A2F	1.000	Port Presents
							1.000	

The information presented in the Unassigned paths screen is split into and upper pane and lower pane, and is identical to the information displayed in the Paths screen.

See also:

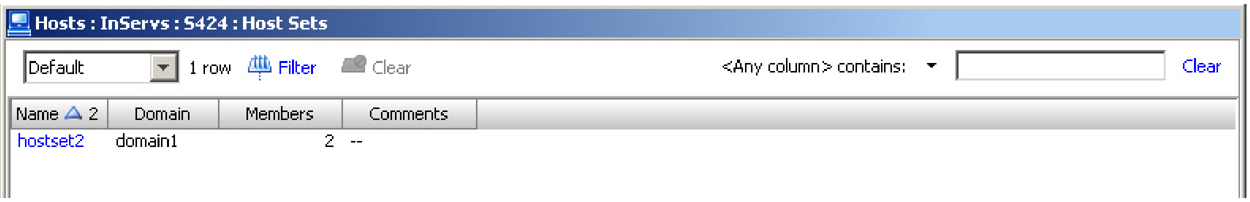
- Hosts_Manager
- Management Tree
- Viewing Paths

Viewing Host Sets

To view a summary of host sets:

1. In the Manager pane, click **Hosts**.
2. In the Management tree, click **Host Sets** under the **Hosts** node for InServ Storage Server that contains the host sets you wish to view.

The host set summary screen appears as follows:



Name ▲ 2	Domain	Members	Comments
hostset2	domain1	2	--

The following information is provided:

Column	Description
Name	The name of the host set. Each name listed is a link to that host sets details screen.
Domain	The domain in which the host set resides.
Members	The number of hosts belonging to the host set.
Comments	Any notes about the host set.

See also:

Hosts_Manager

Management Tree

Viewing Host Set Details

Viewing Host Set Details

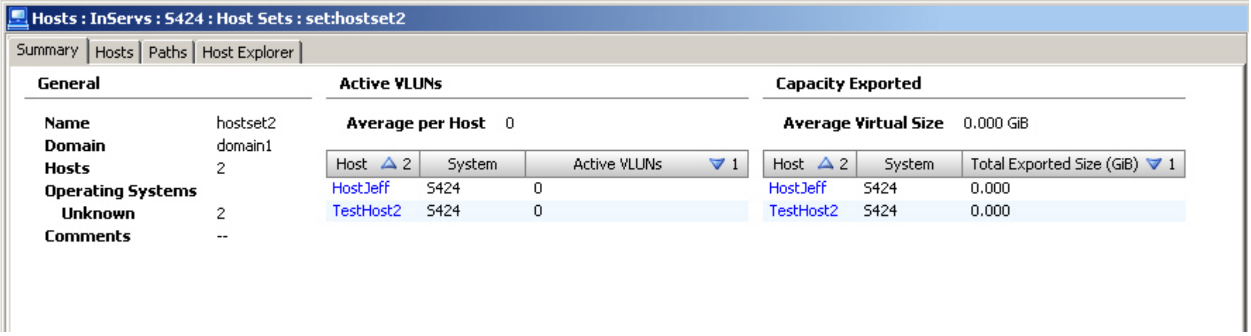
To view host set details:

1. In the Manager pane, click **Hosts**.
2. In the Management tree, click **<host set name>** under the **Host Sets** node for InServ Storage Server that contains the host set you wish to view.

or

➡From the host set summary screen, click the name of the host set to view that host set's details.

The host set details screen appears as follows:



General

Name	hostset2
Domain	domain1
Hosts	2
Operating Systems	
Unknown	2
Comments	--

Active VLUNs

Average per Host 0

Host △ 2	System	Active VLUNs ▽ 1
HostJeff	S424	0
TestHost2	S424	0

Capacity Exported

Average Virtual Size 0.000 GiB

Host △ 2	System	Total Exported Size (GiB) ▽ 1
HostJeff	S424	0.000
TestHost2	S424	0.000

The following information is provided:

Group	Field	Description
General	**Name**	The host set name.
	Domain	The domain in which the host set resides.
	Hosts	The number of hosts it the host set.
	Operating Systems	Provides a breakdown of operating systems. If Host Explorer is not running, this field displays **Unknown**.
	Comments	Any notes.
Active VLUNs	**Average per Host**	The average number of active VLUNs.
	Column	**Description**

	Host	The host name. Each name listed is a link to the Host screen.
	System	The system name.
	Active VLUNs	The number of active VLUNs per host.
Capacity Exported	**Average Virtual Size**	The average virtual size of exported capacity in GiB.
	Column	**Description**
	Host	The host name. Each name listed is a link to the Host screen.
	System	The system name.
	Total Exported Size	The exported size per host in GiB.

The additional tabs, Hosts, Paths, and Host Explorer are explained in the following:

Viewing Host Information

Viewing Paths

Host_Explorer_Tab

Host_Explorer_Details

See also:

Viewing Host Sets

Manager Pane

Management Tree

Working with Hosts

The **Host Manager** allows the following operations:

Creating Hosts

Editing Hosts

Removing Hosts

Adding Hosts to Host Sets

Exporting Virtual Volumes

Note: If you are a domain user, only information within the domain(s) you have access to, will be visible.

See also:

Manager Pane

Management Tree

Creating Hosts

To create a host, access the **Create Host** wizard:

1. Click **Hosts** in the Manager Pane.
2. Click **Create Host** in the Common Actions Panel.

The **Create Host** wizard appears.

Step 1. General

1. In the **General** group box:
   a. **System** - Select the system to create the new host.
   b. **Domain** - Select the domain in which to create the new host. Select **<none>** if not applicable.
   c. **Name** - Enter the host name.
   d. **Set Name** - Select the host set in which to create the new host. Select **<none>** if not applicable.
   e. **Persona** - Select the host persona.
      - 1 = Generic; UARepLun, SESLun
      - 2 = ALUA; UARepLun, RTPG, SESLun
      - 6 = Generic (legacy)
      - 7 = HPUX (legacy); VolSetAddr

   - 8 = AIX (legacy); NACA
   - 9 = Egenera; SoftInq
   - 10 = ONTAP (legacy); SoftInq
2. (Optional) In the **Descriptors** group box, enter the description information as desired in the **Location**, **IP Address**, **Operating System**, **Model**, **Contact**, and **Comments** fields.
3. Click **Next**, or click **Finish** to close the wizard and create the host with the information entered.

Step 2. Fibre Channel

1. To assign available WWNs:
   a. Select one or more WWNs from the **Available WWNs** list. This list displays WWNs for all physically connected host paths not already assigned to hosts.
   b. Click the left arrow to add the selected WWN(s) to the **Assigned WWNs** list.
2. To assign new WWNs, enter the WWN(s) for the host in the **New WWN** text box and click **Assign**.
3. Click **Next**, or click **Finish** to close the wizard and create the host with the information entered.

Step 3. iSCSI

1. In the **iSCSI Host Paths** group box:
   a. Select one or more iSCSI names from the **Available iSCSI Names** list. This list displays iSCSI names for all physically connected host paths not already assigned to hosts.
   b. Click the left arrow to add the selected iSCSI name(s) to the **Assigned iSCSI Names** list.
   c. To assign new iSCSI names, enter the iSCSI name(s) in the **New iSCSI Name** text box and click **Assign**.

Note: Rules for the **CHAP** group box in the following step are as follows:

- When clicking the **Initiator CHAP** check box, **CHAP Name** is initialized with the host name (default).
- The **Target CHAP** checKiBox is enabled when the **Initiator CHAP** check box is selected.
- The **CHAP Secret** text box is required if a **CHAP Name** is entered.
- **Target CHAP** is optional.
- **Target CHAP** can only be populated if **Initiator CHAP** is populated.

2. In the **CHAP** group box:
   a. Click the **Initiator CHAP** check box. The **CHAP Name** text box displays the host name.
   b. Enter a secret/password in the **CHAP Secret** text box.

   c. If the **CHAP Secret** text box is entered in hexadecimal, click the **Hex** check box.
   d. If required, click the **Target CHAP** check box. The **CHAP Name** text box displays the InServ Storage Server name.
   e. Enter a secret/password in the **CHAP Secret** text box.
3. Click **Next** to view summary information, or click **Finish** to close the wizard and configure the host with the information gathered.

Step 4. Summary

➔Review the summary information and when satisfied, click **Finish**.

See also:

[Manager Pane]

[Management Tree]

[Common Actions Panel]

[Viewing Host Information]

Editing Hosts

To edit a host, access the **Edit Host** wizard:

1. Click **Hosts** in the Manager Pane.
2. In the Management Tree, click **Hosts** under the system where the host you wish to edit resides.
3. Click the **Hosts** tab in the Hosts screen.
4. Right-click the host you wish to edit and then click **Edit Host** in the menu that appears.

   The **Edit Host** wizard appears.

Step 1. General

1. In the **General** group box:
   a. **Name** - Enter a new host name.
   b. **Persona** - Select a new host persona.
2. (Optional) In the **Descriptors** group box, edit the description information as desired in the **Location**, **IP Address**, **Operating System**, **Model**, **Contact**, and **Comments** fields.
3. Click **Next**, or click **Finish** to close the wizard and edit the host with the information entered.

Step 2. Fibre Channel

1. To assign available WWNs:
   a. Select one or more WWNs from the **Available WWNs** list. This list displays WWNs for all physically connected host paths not already assigned to hosts.
   b. Click the left arrow to add the selected WWN(s) to the **Assigned WWNs** list.
   c. To remove assigned WWNs, select one or more WWNs from the **Assigned WWNs** list and click the right arrow.
2. To assign new WWNs, enter the WWN(s) for the host in the **New WWN** text box and click **Assign**.
3. Click **Next**, or click **Finish** to close the wizard and edit the host with the information entered.

Step 3. iSCSI

1. In the **iSCSI Host Paths** group box:
   a. Select one or more iSCSI names from the **Available iSCSI Names** list. This list displays iSCSI names for all physically connected host paths not already assigned to hosts.
   b. Click the left arrow to add the selected iSCSI name(s) to the **Assigned iSCSI Names** list.
   c. To remove assigned iSCSI names, select one or more iSCSI names from the **Assigned iSCSI Names** list and click the right arrow.
   d. To assign new iSCSI names, enter the iSCSI name(s) in the **New iSCSI Name** text box and click **Assign**.

Note: Rules for the **CHAP** group box in the following step are as follows:

- When clicking the **Initiator CHAP** check box, **CHAP Name** is initialized with the host name (default).
- The **Target CHAP** checKiBox is enabled when the **Initiator CHAP** check box is selected.
- The **CHAP Secret** text box is required if a **CHAP Name** is entered.
- **Target CHAP** is optional.
- **Target CHAP** can only be populated if **Initiator CHAP** is populated.

2. In the **CHAP** group box:
   a. Click the **Initiator CHAP** check box. The **CHAP Name** text box displays the host name.
   b. Enter a new secret/password in the **CHAP Secret** text box.
   c. If the **CHAP Secret** text box is entered in hexadecimal, click the **Hex** check box.
   d. If required, click the **Target CHAP** check box. The **CHAP Name** text box displays the InServ Storage Server name.
   e. Enter a new secret/password in the **CHAP Secret** text box.
3. Click **Next** to view summary information, or click **Finish** to close the wizard and edit the host with the information gathered.

Step 4. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

- Manager Pane
- Management Tree
- Common Actions Panel
- Viewing Host Information
- Creating Hosts
- Selecting Multiple Items

Removing Hosts

To remove a host or multiple hosts:

1. Click **Hosts** in the Manager Pane.
2. In the Management Tree, click **Hosts** under the system where the host(s) you wish to remove resides.
3. Click the **Hosts** tab in the Hosts screen.
4. Select the host(s) you wish to remove.
5. Right-click and then click **Remove Host** in the menu that appears.

   The **Remove Host** dialog box appears.

6. (Optional) In the **Remove Host** dialog box, select **Remove host even if there are exported volumes**.
7. Click **OK**.

See also:

- Manager Pane
- Management Tree
- Common Actions Panel
- Viewing Host Information
- Selecting Multiple Items

Adding Hosts to Host Sets

Hosts can be added to existing host sets.

To add a host or multiple hosts to an existing host set, access the **Add to Host Set** dialog box:

1. Click **Hosts** in the Manager Pane.
2. In the Management Tree, click **Hosts** under the system where the host(s) resides.
3. Click the **Hosts** tab in the Hosts screen.
4. Select the host(s) you wish to add.
5. Right-click and then click **Add to Host Set** in the menu that appears.

   The **Add to Host Set** dialog box appears.

6. Select a host set from the host set list.
7. Click **OK**.

See also:

Manager Pane

Management Tree

Common Actions Panel

Viewing Host Information

Selecting Multiple Items

Working with Host Sets

Exporting Virtual Volumes

To export a virtual volume, access the **Export Virtual Volume** wizard:

1. Click **Hosts** or **Provisioning** in the Manager Pane.
2. If you are working in the **Hosts** manager, in the Common Actions panel, click **Export Volume**.
3. If you are working in the **Provisioning** manager:
   a. Access the **Virtual Volumes** tab.
   b. Right-click the volume you wish to exort.
   c. In the menu that appears, click **Export**.

   The **Export Virtual Volume** wizard appears.

Step 1. General

1. Perform the **General** group box:
    - a. **System** - Select a system from the list.
    - b. **Domain** - Select a domain from the list. If not applicable, select <none>.
    - c. Select either **Virtual Volume** or **Virtual Volume Set**.
    - d. From the virtual volume or virtual volume set list, select the volume(s) to export.
2. Click **Next**.

Step 2. Settings

1. In the **Settings** group box:
    - a. Select either **Host** or **Host Set**.
    - b. From the host or host set list, select the host(s) or host set(s) on which the volume will be exported.
    - c. **Port** - Select a port from the list.
    - d. **LUN** - Select the **Auto** checKiBox for the system to select the LUN, or enter a number.
    - e. (Optional) To allow overriding of lower priority templates, click the **Override lower priority templates** checKiBox.
    - f. (Optional) To prevent the storage server from issuing a Loop Initialization Primitive (LIP), or Registered State Change notification (RSCN), click **After export, do not issue VLUN change notification (no LIP or RSCN)**.
2. Click **Finish** if you wish to export the volume(s) as configured, or click **Next** to view the summary.

Step 3. Summary

➜Review the summary information and when satisfied, click **Finish**.

See also:

- Manager Pane
- Common Actions Panel
- Selecting Multiple Items
- Viewing Virtual Volumes
- Creating VLUNs

Working with Host Sets

Host sets allow users to create a name for a group of hosts. This allows a virtual volume to be exported to the same set of hosts.

When working with host sets, the following operations are available:

- Creating Host Sets
- Editing Host Sets
- Removing Host Sets
- Exporting Virtual Volumes

> **Note:** If you are a domain user, only information within the domain(s) you have access to, will be visible.

See also:

- Manager Pane
- Management Tree

Creating Host Sets

To create a host set, access the **Create Host Set** wizard:

1. Click **Hosts** in the Manager Pane.
2. Click **Create Host Set** in the Common Actions Panel.

The **Create Host Set** wizard appears.

Step 1. General

1. In the **General** group box:
    a. **System** - Select the system to create the new host set.
    b. **Domain** - Select the domain in which to create the new host set. Select **<none>** if not applicable.
    c. **Name** - Enter the host set name.
    d. **Comments** - Enter any notes.
2. Click **Next**, or click **Finish** to close the wizard and create the host set with the information entered.

Step 2. Hosts

1. To assign available hosts:
   a. Select one or more WWNs from the **Available** hosts list.
   b. Click the down arrow to add the selected WWN(s) to the **Assigned** hosts list.
2. Click **Next**, or click **Finish** to close the wizard and create the host set with the information entered.

Step 3. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

- Manager Pane
- Management Tree
- Common Actions Panel
- Viewing Host Information

Editing Host Sets

To edit a host set, access the **Edit Host Set** wizard:

1. Click **Hosts** in the Manager Pane.
2. In the Management Tree, click **Host Sets** under the system where the host set you wish to edit resides.
3. in the Host Sets screen, right-click the host set you wish to edit and then click **Edit** in the menu that appears.

   The **Edit Host Set** wizard appears.

Step 1. General

1. In the **General** group box:
   a. **Name** - Enter a new host set name.
   b. **Comments** - Enter any notes.
2. Click **Next**, or click **Finish** to close the wizard and edit the host set with the information entered.

Step 2. Hosts

1. To assign available hosts:
   a. Select one or more WWNs from the **Available** hosts list.
   b. Click the down arrow to add the selected WWN(s) to the **Assigned** hosts list.
   c. To remove hosts from the **Assigned** hosts list, select one or more hosts from the **Assigned** host list and click the up arrow.
2. Click **Next**, or click **Finish** to close the wizard and editthe host set with the information entered.

Step 3. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

Manager Pane

Management Tree

Common Actions Panel

Viewing Host Information

Creating Host Sets

Removing Host Sets

To remove a host set or multiple host sets:

1. Click **Hosts** in the Manager Pane.
2. In the Management Tree, click **Host Sets** under the system where the host set(s) you wish to remove resides.
3. in the Host Sets screen, select the host set(s) you wish to remove.
4. Right-click and then click **Remove** in the menu that appears.

   The **Remove Host Set** wizard appears.

5. Click **OK**.

See also:

- Manager Pane
- Management Tree
- Common Actions Panel
- Viewing Host Information
- Selecting Multiple Items

Exporting Virtual Volumes

To export a virtual volume, access the **Export Virtual Volume** wizard:

1. Click **Hosts** or **Provisioning** in the Manager Pane.
2. If you are working in the **Hosts** manager, in the Common Actions panel, click **Export Volume**.
3. If you are working in the **Provisioning** manager:
   a. Access the **Virtual Volumes** tab.
   b. Right-click the volume you wish to exort.
   c. In the menu that appears, click **Export**.

The **Export Virtual Volume** wizard appears.

Step 1. General

1. Perform the **General** group box:
   a. **System** - Select a system from the list.
   b. **Domain** - Select a domain from the list. If not applicable, select <none>.
   c. Select either **Virtual Volume** or **Virtual Volume Set**.
   d. From the virtual volume or virtual volume set list, select the volume(s) to export.
2. Click **Next**.

Step 2. Settings

1. In the **Settings** group box:
   a. Select either **Host** or **Host Set**.
   b. From the host or host set list, select the host(s) or host set(s) on which the volume will be exported.
   c. **Port** - Select a port from the list.
   d. **LUN** - Select the **Auto** checKiBox for the system to select the LUN, or enter a number.
   e. (Optional) To allow overriding of lower priority templates, click the **Override lower priority templates** checKiBox.

   f. (Optional) To prevent the storage server from issuing a Loop Initialization Primitive (LIP), or Registered State Change notification (RSCN), click **After export, do not issue VLUN change notification (no LIP or RSCN)**.

2. Click **Finish** if you wish to export the volume(s) as configured, or click **Next** to view the summary.

Step 3. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

- Manager Pane
- Common Actions Panel
- Selecting Multiple Items
- Viewing Virtual Volumes
- Creating VLUNs

Working with the Provisioning Manager

The **Provisioning Manager** allows you to perform all provisioning tasks for your InServ Storage Server. These tasks include:

- Creating, editing, and maintaining virtual volumes, virtual volume sets, and virtual volume templates, as well as exporting virtual volumes.
- Creating,editing, and maintaining Common Provisioning Groups (CPGs) and CPG templates.

Additionally, the **Provisioning** manager provides several ways to monitor the health of your system's provisioning.

To learn how to use the **Provisioning** manager, see the following topics:

- Viewing Provisioning for All Systems
- Viewing Provisioning for a Single System
- Working with Common Provisioning Groups
- Working with Virtual Volumes
- Working with Virtual Volume Sets
- Working with VLUNs
- Working with Templates

Note: If you are a domain user, only information within the domain(s) you have access to, will be visible.

If you are a domain user, you can perform any provisioning task via the **Domains** node in the management tree. The information and procedures when working in the **Domains** node are identical to those under the **InServs** node, except information is filtered by domain.

See also:

Manager Pane

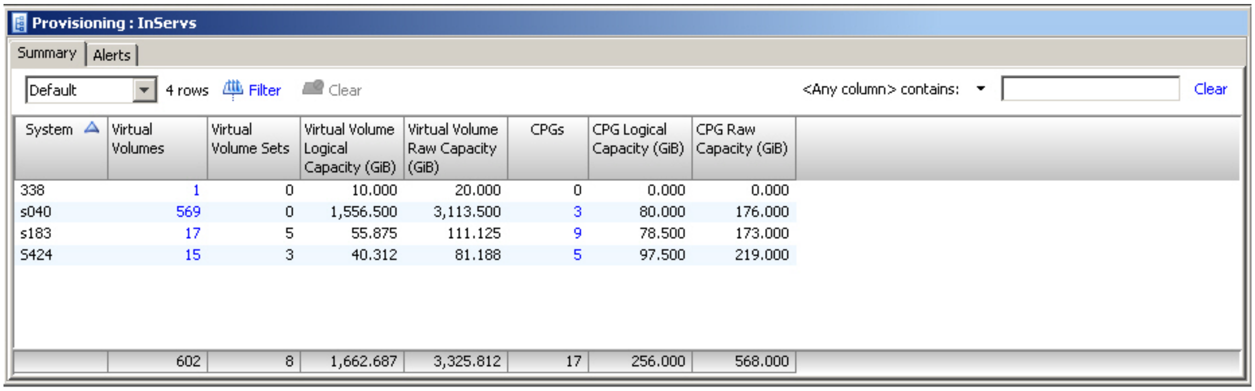
Management Tree

Viewing Provisioning for All Systems

To view provisioning for all connected systems:

1. In the Manager Pane, click **Provisioning**.
2. In the Management Tree, click **InServs**.

The **Provisioning** screen appears in the Management Window.



System	Virtual Volumes	Virtual Volume Sets	Virtual Volume Logical Capacity (GiB)	Virtual Volume Raw Capacity (GiB)	CPGs	CPG Logical Capacity (GiB)	CPG Raw Capacity (GiB)
338	1	0	10.000	20.000	0	0.000	0.000
s040	569	0	1,556.500	3,113.500	3	80.000	176.000
s183	17	5	55.875	111.125	9	78.500	173.000
S424	15	3	40.312	81.188	5	97.500	219.000
	602	8	1,662.687	3,325.812	17	256.000	568.000

The **Provisioning** screen provides information on two tabs, **Summary** and **Alerts**.

Summary Tab

The **Summary** tab displays the general provisioning of all connected systems. The following information is included:

Column	Description
System	The InServ Storage Server name.
Virtual Volumes	The number of virtual volumes on the system. Each value is a link to that system's Virtual Volume screen.
Virtual Volume Sets	The number of virtual volume sets on the system.
Virtual Volume Logical Capacity	The total amount of virtual volume logical capacity in GiB.
Virtual Volume Raw Capacity	The total amount of virtual volume raw capacity in GiB.
CPGs	The number CPGs on the system. Each value is a link to that system's CPGs screen.
CPG Logical Capacity	The total amount of CPG logical capacity in GiB.
CPG Raw Capacity	The total amount of CPG raw capacity in GiB.
The bottom row of the table displays the column totals.	

Alerts Tab

The **Alerts** tab displays provisioning-related alerts for all connected systems. The information displayed in the provisioning **Alerts** tab is identical to the information contained in the systems **Alerts** tab.

- The **Provisioning Alerts** tab displays only provisioning-related alerts.
- See Viewing System Alerts.

See also:

Manager Pane

Management Tree

Management Window

Viewing Provisioning for a Single System

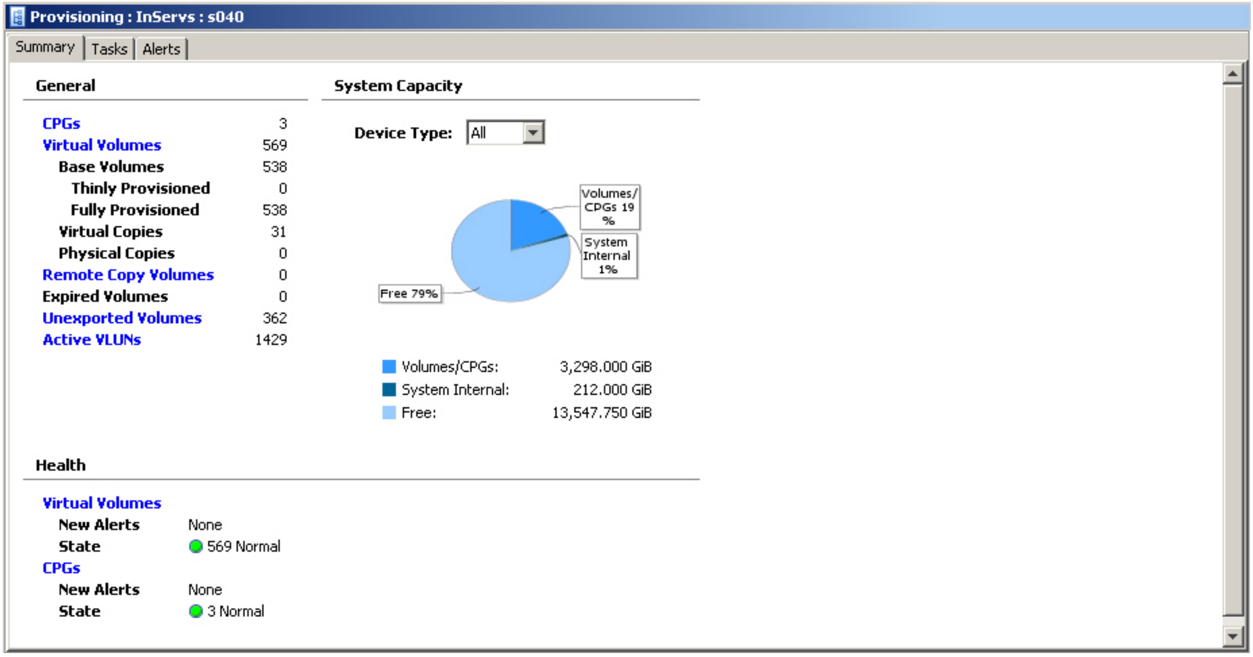
To view the provisioning for a single system:

1. In the Manager Pane, click **Provisioning**.
2. In the Management Tree, click the system under the **InServs** node you wish to view.

The **Provisioning** screen appears in the Management Window, and provides information on three tabs, **Summary**, **Tasks**, and **Alerts**.

Summary Tab

The **Summary** tab provides information about all provisioning in the system.



General

CPGs	3
Virtual Volumes	569
Base Volumes	538
Thinly Provisioned	0
Fully Provisioned	538
Virtual Copies	31
Physical Copies	0
Remote Copy Volumes	0
Expired Volumes	0
Unexported Volumes	362
Active VLUNs	1429

System Capacity

Device Type: All

Volumes/CPGs:	3,298.000 GiB
System Internal:	212.000 GiB
Free:	13,547.750 GiB

Health

Virtual Volumes

New Alerts	None
State	● 569 Normal

CPGs

New Alerts	None
State	● 3 Normal

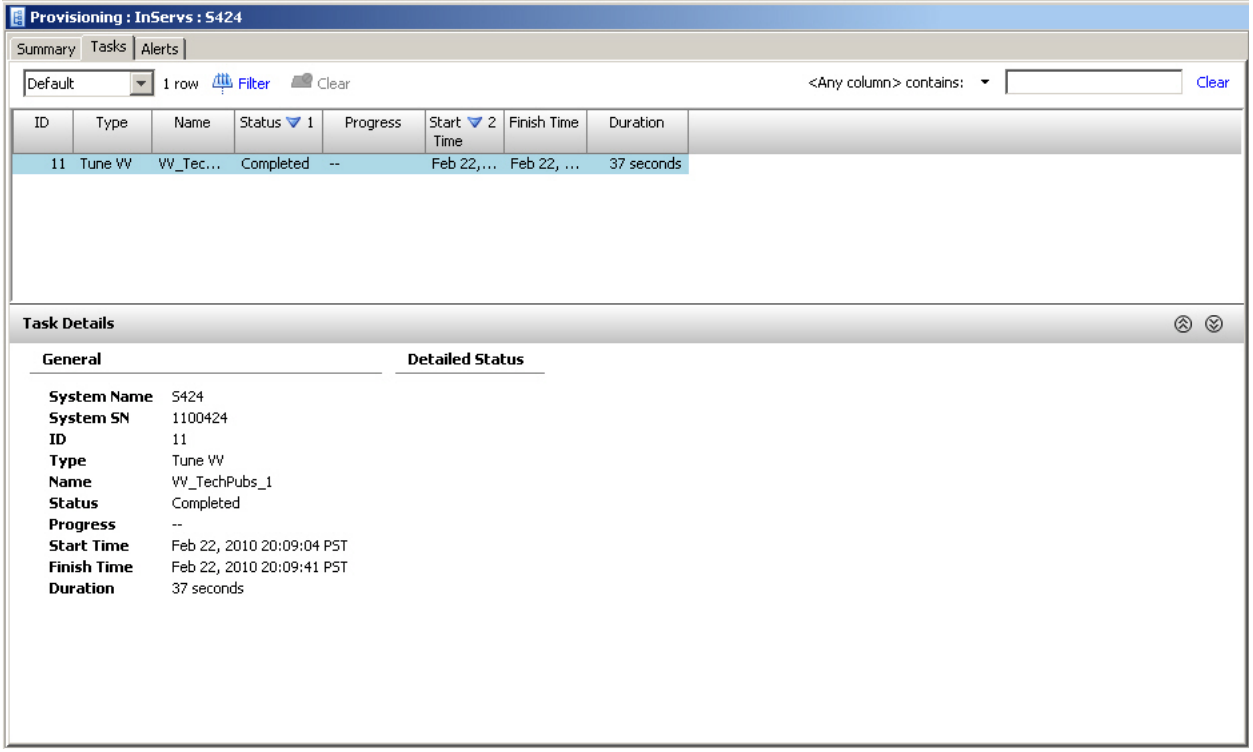
The following information is displayed:

Group	Field	Description
General	**CPGs**	The total number of CPGs.
	Virtual Volumes	The total number of virtual volumes.
	Base Volumes	The total number of base volumes.
	Thinly Provisioned	The total number of thinly provisioned virtual volumes.
	Fully Provisioned	The total number of fully provisioned virtual volumes.
	Virtual Copies	The total number of virtual copies.
	Physical Copies	The total number of physical copies.

	Remote Copy Volumes	The total number of Remote Copy virtual volumes.
	Expired Volumes	The total number of expired virtual volumes.
	Unexported Volumes	The total number of unexported virtual volumes.
	Active VLUNs	The total number of active exported virtual volumes.
System Capacity	**Device Type**	Select the device type, Fibre Channel (**FC**), Near Line (**NL**), or Solid State Device (**SSD**). The capacity and capacity usage of the selected device type is displayed in graphical form. You can also select **All** to display capacity and capacity usage for all device types.
Health	**Virtual Volumes**	
	New Alerts	The number of new virtual volume alerts.
	State	The current state of the system's virtual volumes. See the Alert/Task/Connection Pane for new alerts.
	CPGs	
	New Alerts	The number of new CPG alerts.
	State	The current state of the system's CPGs. See the Alert/Task/Connection Pane for new alerts.

Tasks Tab

The **Tasks** tab displays information about running and completed system provisioning tasks.


Provisioning : InServs : S424
Summary
Tasks
Alerts
Default
1 row
Filter
Clear
<Any column> contains:
Clear
Task Details
General
Detailed Status

ID	Type	Name	Status 1	Progress	Start Time 2	Finish Time	Duration
11	Tune VV	VV_Tec...	Completed	--	Feb 22,...	Feb 22, ...	37 seconds

System Name	S424
System SN	1100424
ID	11
Type	Tune VV
Name	VV_TechPubs_1
Status	Completed
Progress	--
Start Time	Feb 22, 2010 20:09:04 PST
Finish Time	Feb 22, 2010 20:09:41 PST
Duration	37 seconds

The **Tasks** tab is divided into an upper pane and lower pane. The upper pane displays a summary of provisioning tasks for the storage server. The lower pane displays details about a selected task from the upper pane.

- Upper_Pane
- Lower_Pane

Upper Pane

The upper pane provides the following information:

Column	Description
ID	The task ID.
Type	The task type.
Name	The virtual volume name on which the task was performed.
Status	The status of the task.

Progress	A graphical representation of the percentage of the task that has completed.
Start Time	The time the task started.
Finish Time	The time the task finished.
Duration	The amount of time the task took to complete.

Lower Pane

The lower pane provides the following information:

Group	Field	Description
General	**System Name**	The name of the InServ Storage Server.
	System SN	The serial number of the InServ Storage Server.
	ID	The task ID.
	Type	The task type.
	Name	The virtual volume name on which the task was performed.
	Status	The status of the task.
	Progress	A graphical representation of the percentage of the task that has completed.
	Start Time	The time the task started.
	Finish Time	The time the task finished.
	Duration	The amount of time the task took to complete.

Detailed Status	Displays any details about the task as the task is running.

Alerts Tab

The **Alerts** tab displays provisioning-related alerts for the system. The information displayed in the provisioning **Alerts** tab is identical to the information contained in the systems **Alerts** tab, except for the following:

- The provisioning **Alerts** tab displays only provisioning-related alerts.
- See Viewing System Alerts.

See also:

Manager Pane

Management Tree

Management Window

Alert/Task/Connection Pane

Alert Severity Indicators

Viewing System Alerts

Working with Common Provisioning Groups

The **Provisioning Manager** allows you to perform all tasks associated with system Common Provisioning Groups (CPGs), from their creation, to their maintenance, and ultimately, their removal. The following topics are provided:

Viewing Common Provisioning Groups

Creating Common Provisioning Groups

Editing a Common Provisioning Group

Creating Similar Common Provisioning Groups

Saving a Common Provisioning Group as a Template

Compacting a Common Provisioning Group

Removing a Common Provisioning Group

Viewing Common Provisioning Groups

To view a system's Common Provisioning Groups (CPGs):

1. In the Manager Pane, click **Provisioning**.
2. In the Management Tree, click **CPGs** under the system node you wish to view.

The **Provisioning-CPGs** screen appears in the Management Window, provides information about system CPGs on three tabs, **Summary**, **CPGs**, and **Alerts**, which are explained in the following topics:

Viewing the Common Provisioning Group Summary Tab

Viewing the Common Provisioning Group CPGs Tab

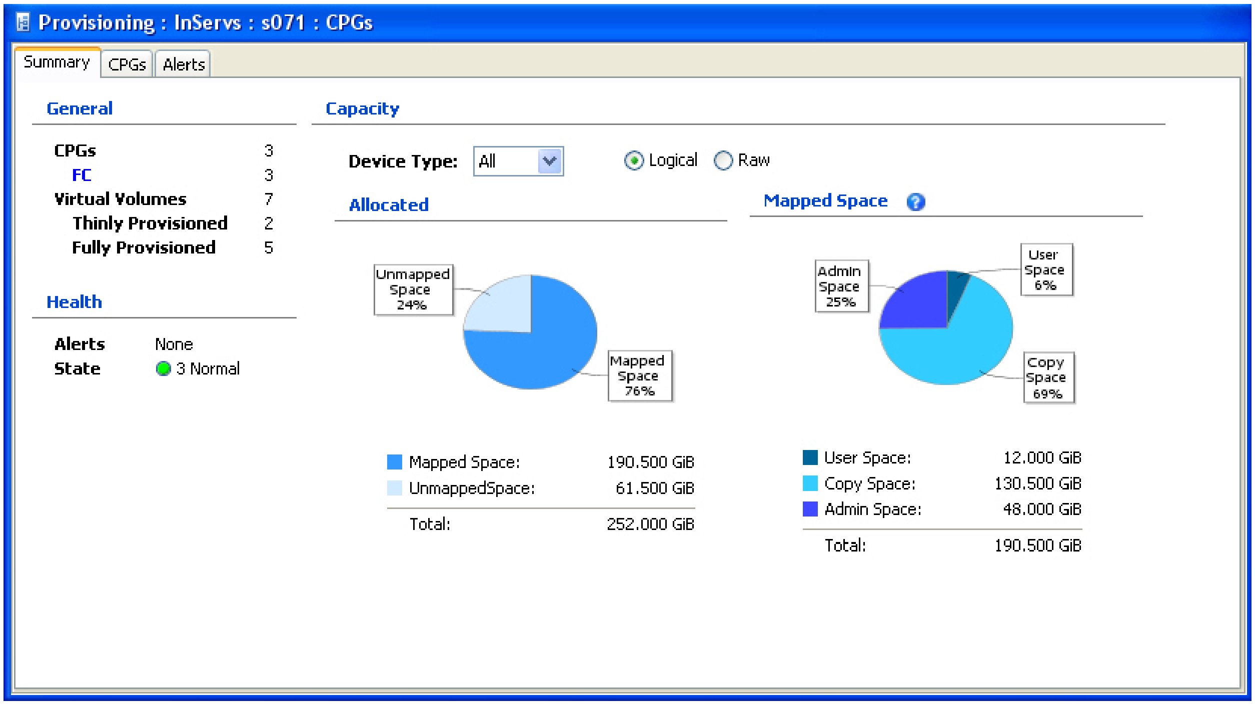
Viewing the Common Provisioning Group Alerts Tab

Viewing the Common Provisioning Group Summary Tab

To view the Common Provisioning Group (CPG) **Summary** tab:

1. Access the CPG screen.
2. In the Management Window, click the **Summary** tab.

The **Summary** tab provides information about CPGs in the system.


Provisioning : InServs : s071 : CPGs
Summary
CPGs
Alerts
Unmapped Space 24%
Mapped Space 76%
Admin Space 25%
User Space 6%
Copy Space 69%

General

CPGs	3
FC	3
Virtual Volumes	7
Thinly Provisioned	2
Fully Provisioned	5

Health

Alerts: None
State: ● 3 Normal

Capacity

Device Type: All
● Logical ○ Raw

Allocated

Mapped Space:	190.500 GiB
UnmappedSpace:	61.500 GiB
Total:	252.000 GiB

Mapped Space

User Space:	12.000 GiB
Copy Space:	130.500 GiB
Admin Space:	48.000 GiB
Total:	190.500 GiB

The following information is displayed:

Group	Field	Description
General	CPGs	The total number of CPGs.
	FC	The total number of Fibre Channel (**FC**) drives.
	NL	The total number of Near Line (**NL**) drives.
	SSD	The total number of Solid State Devices (**SSD**).
	Virtual Volumes	The total number of virtual volumes.
	Thinly Provisioned	The total number of thinly provisioned virtual volumes.
	Fully Provisioned	The total number of fully provisioned virtual volumes.
Health	Alerts	The total number of alerts.

	State	The current state. See System and Component Status Icons.
Capacity	**Device Type**	Select the device type, Fibre Channel (**FC**), Near Line (**NL**), or Solid State Device (**SSD**). The capacity and capacity usage of the selected device type is displayed in graphical form. You can also select **All** to display capacity and capacity usage for all device types.
	Logical	Select to display logical capacity.
	Raw	Select to display raw capacity.
Allocated	Displays mapped and unmapped allocated space.	
Mapped Space	Displays the distribution of mapped space.	

Viewing the CPGs Tab

To view the **CPGs** tab:

1. Access the CPG screen.
2. In the Management Window, click the **CPGs** tab.

The **CPGs** tab presents information in an upper pane and lower pane.

Upper_Pane

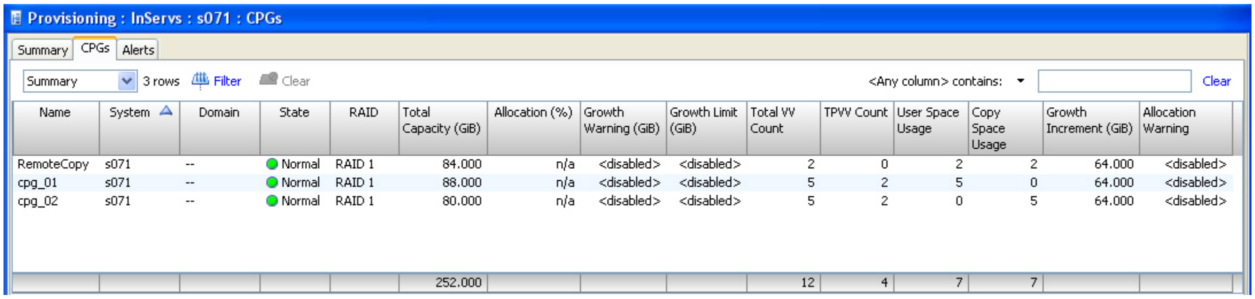
Lower_Pane

Upper Pane

The table displayed in the upper pane can be filtered to display Summary, Allocation, Capacity, Raw Capacity, and Alert information.

Displaying Summary Information

➜To view summary information, select **Summary** from the filtering list. The summary information appears as follows:



Name	System	Domain	State	RAID	Total Capacity (GiB)	Allocation (%)	Growth Warning (GiB)	Growth Limit (GiB)	Total VV Count	TPVV Count	User Space Usage	Copy Space Usage	Growth Increment (GiB)	Allocation Warning
RemoteCopy	s071	--	● Normal	RAID 1	84.000	n/a	<disabled>	<disabled>	2	0	2	2	64.000	<disabled>
cpg_01	s071	--	● Normal	RAID 1	88.000	n/a	<disabled>	<disabled>	5	2	5	0	64.000	<disabled>
cpg_02	s071	--	● Normal	RAID 1	80.000	n/a	<disabled>	<disabled>	5	2	0	5	64.000	<disabled>
					252.000				12	4	7	7		

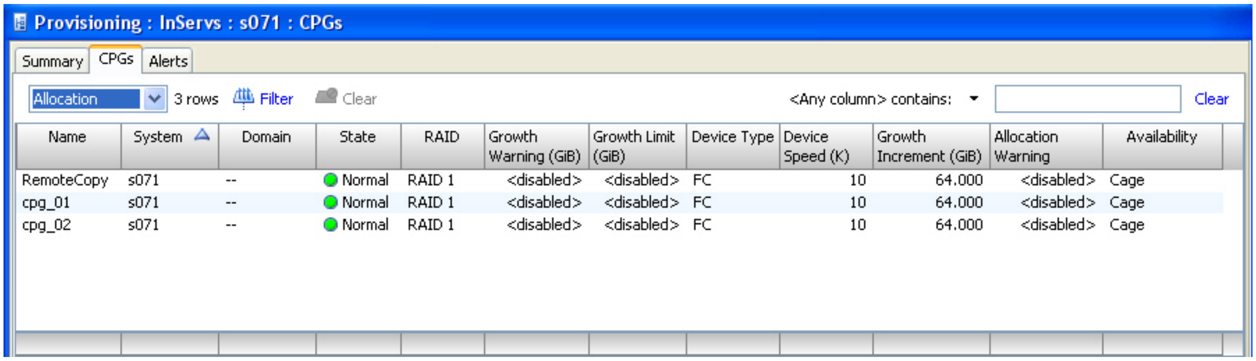
The following information is displayed:

Column	Description
Name	The volume name.
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
State	The state of the system.
RAID	The volume's RAID type.
Total Capacity	The CPG's total capacity in GiB.
Allocation	The percentage
Growth Warning	The CPG's growth size (in GiB) at which a warning alert is generated.
Growth Limit	The size limit (in GiB) after which the CPG will not grow.
Total VV Count	The total number of VVs using the CPG.
User Space Usage	The total number of VVs whose user space is using the CPG.
Copy Space Usage	The total number of VVs whose copy space is using the CPG.
Growth Increment	The CPG grow size in GB.

Allocation Warning	If enabled, the allocation warning percentage.

Displaying Allocation Information

➜To view allocation information, select **Allocation** from the filtering list. The allocation information appears as follows:



Name	System	Domain	State	RAID	Growth Warning (GiB)	Growth Limit (GiB)	Device Type	Device Speed (K)	Growth Increment (GiB)	Allocation Warning	Availability
RemoteCopy	s071	--	● Normal	RAID 1	<disabled>	<disabled>	FC	10	64.000	<disabled>	Cage
cpg_01	s071	--	● Normal	RAID 1	<disabled>	<disabled>	FC	10	64.000	<disabled>	Cage
cpg_02	s071	--	● Normal	RAID 1	<disabled>	<disabled>	FC	10	64.000	<disabled>	Cage

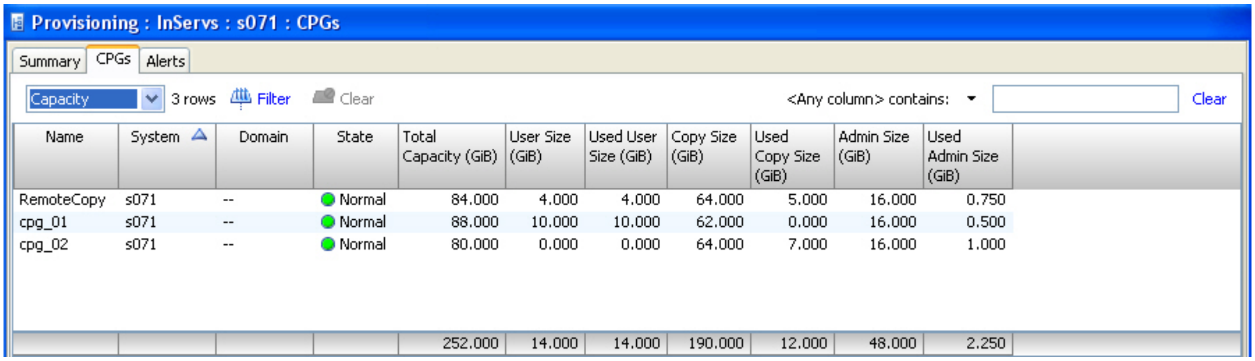
The following information is displayed:

Column	Description
Name	The volume name.
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
State	The state of the system.
RAID	The volume's RAID type.
Growth Warning	The CPG's growth size (in GiB) at which a warning alert is generated.
Growth Limit	The size limit (in GiB) after which the CPG will not grow.
Device Type	The type of physical disk, either Fibre Channel (**FC**), Near Line (**NL**), or Solid State (**SSD**).
Device Speed	The disk speed.
NOTE: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the	

number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
Growth Increment	The CPG grow size in GB.
Allocation Warning	If enabled, the allocation warning percentage.
Availability	The availability of **Disk**, **Port**, **Cage**, or **Mag**.

Displaying Capacity Information

➡ To view capacity information, select **Capacity** from the filtering list. The capacity information appears as follows:



Name	System	Domain	State	Total Capacity (GiB)	User Size (GiB)	Used User Size (GiB)	Copy Size (GiB)	Used Copy Size (GiB)	Admin Size (GiB)	Used Admin Size (GiB)
RemoteCopy	s071	--	● Normal	84.000	4.000	4.000	64.000	5.000	16.000	0.750
cpg_01	s071	--	● Normal	88.000	10.000	10.000	62.000	0.000	16.000	0.500
cpg_02	s071	--	● Normal	80.000	0.000	0.000	64.000	7.000	16.000	1.000
				252.000	14.000	14.000	190.000	12.000	48.000	2.250

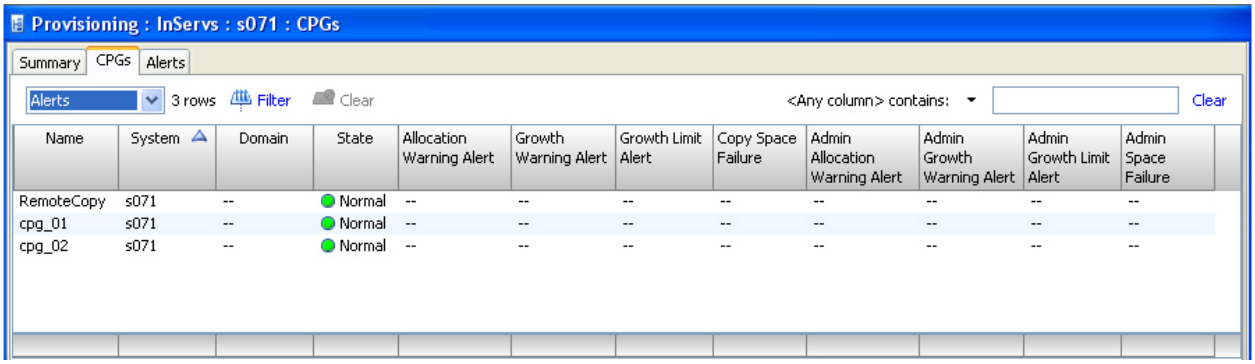
The following information is displayed:

Column	Description
Name	The volume name.
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
State	The state of the system.
Total Capacity	The CPG's total capacity in GiB.
User Size	The user space size in GiB.
Used User Size (%)	The amount of used user space in GiB.

Copy Size	The copy space size in GiB.
Used Copy Size	The amount of used copy space in GiB.
Admin Size	The total amount of admin space in GiB.
Used Admin Size	The total amount of used admin space in GiB.

Displaying Raw Capacity Information

➡To view raw capacity information, select **Raw Capacity** from the filtering list. The raw capacity information appears as follows:



Name	System	Domain	State	Allocation Warning Alert	Growth Warning Alert	Growth Limit Alert	Copy Space Failure	Admin Allocation Warning Alert	Admin Growth Warning Alert	Admin Growth Limit Alert	Admin Space Failure
RemoteCopy	s071	--	● Normal	--	--	--	--	--	--	--	--
cpg_01	s071	--	● Normal	--	--	--	--	--	--	--	--
cpg_02	s071	--	● Normal	--	--	--	--	--	--	--	--

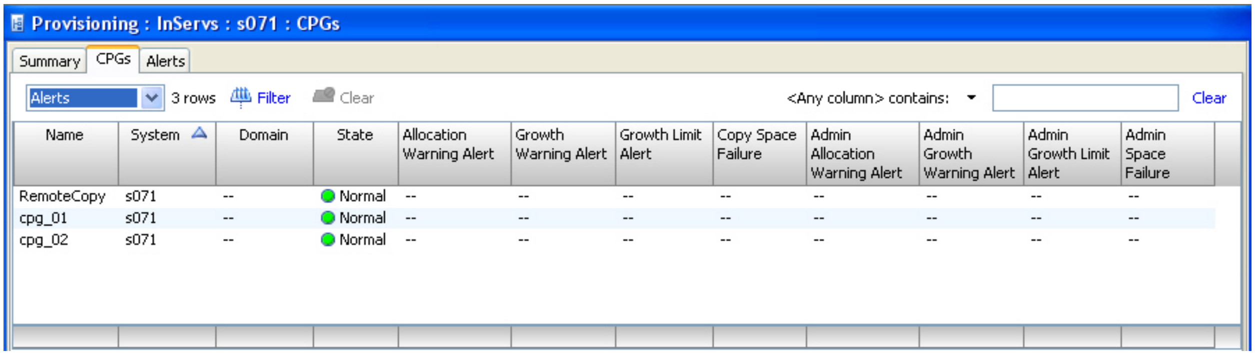
The following information is displayed:

Column	Description
Name	The volume name.
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
State	The state of the system.
Total Raw Capacity	The CPG's total raw capacity in GiB.
Raw User Size	The raw user space size in GiB.
Raw Used User Size	The amount of used raw user space in GiB.

Raw Copy Size	The raw copy space size in GiB.
Raw Used Copy Size	The amount of used raw copy space in GiB.
Raw Admin Size	The total amount of raw admin space in GiB.
Raw Used Admin Size	The total amount of used raw admin space in GiB.

Displaying Alert Information

➡To view alert information, select **Alerts** from the filtering list. The alert information appears as follows:


Provisioning : InServs : s071 : CPGs
Summary
CPGs
Alerts
Alerts
3 rows
Filter
Clear
<Any column> contains:
Clear

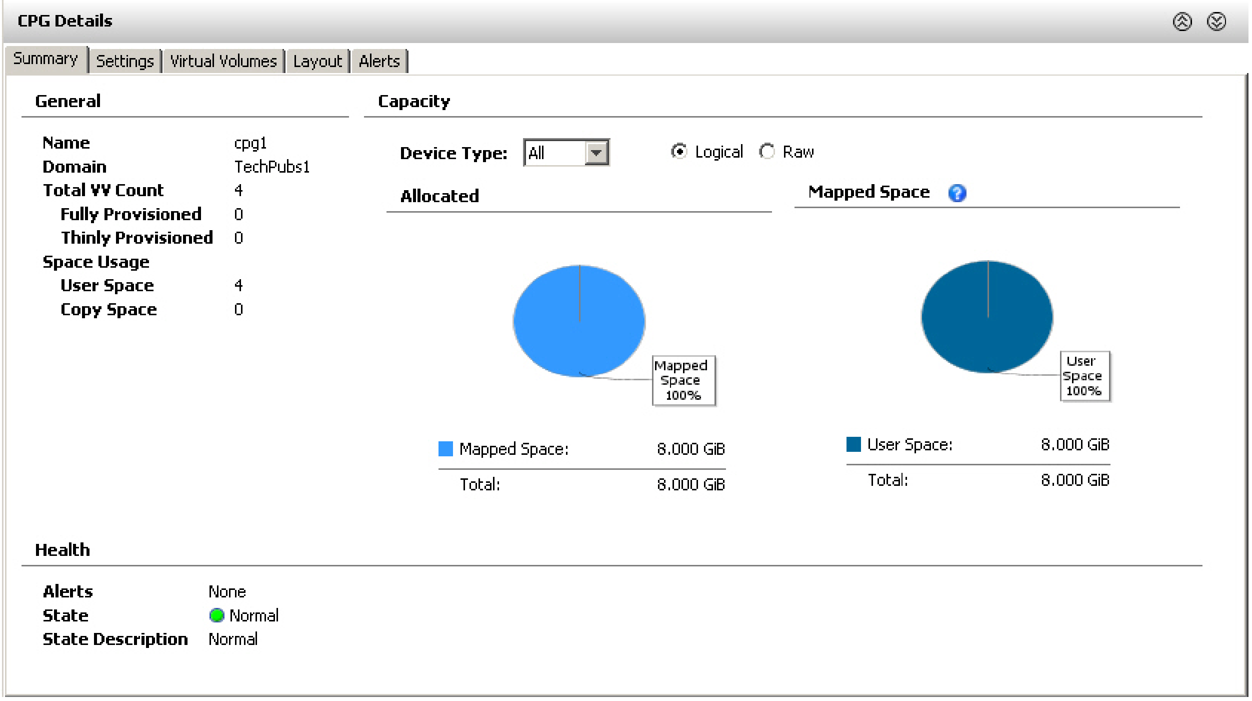
Name	System	Domain	State	Allocation Warning Alert	Growth Warning Alert	Growth Limit Alert	Copy Space Failure	Admin Allocation Warning Alert	Admin Growth Warning Alert	Admin Growth Limit Alert	Admin Space Failure
RemoteCopy	s071	--	● Normal	--	--	--	--	--	--	--	--
cpg_01	s071	--	● Normal	--	--	--	--	--	--	--	--
cpg_02	s071	--	● Normal	--	--	--	--	--	--	--	--

Lower Pane

The lower pane displays detailed information about a single CPG selected from the upper pane. The lower pane displays information on six tabs, **Summary**, **Settings**, **Virtual Volumes**, **Logical Disks**, **Layout**, and **Alerts**.

Summary Tab

The lower pane's **Summary** tab appears as follows:



General

Name	cpg1
Domain	TechPubs1
Total VV Count	4
Fully Provisioned	0
Thinly Provisioned	0
Space Usage	
User Space	4
Copy Space	0

Capacity

Device Type: All ● Logical ○ Raw

Allocated

Mapped Space:	8.000 GiB
Total:	8.000 GiB

Mapped Space

User Space:	8.000 GiB
Total:	8.000 GiB

Health

Alerts	None
State	● Normal
State Description	Normal

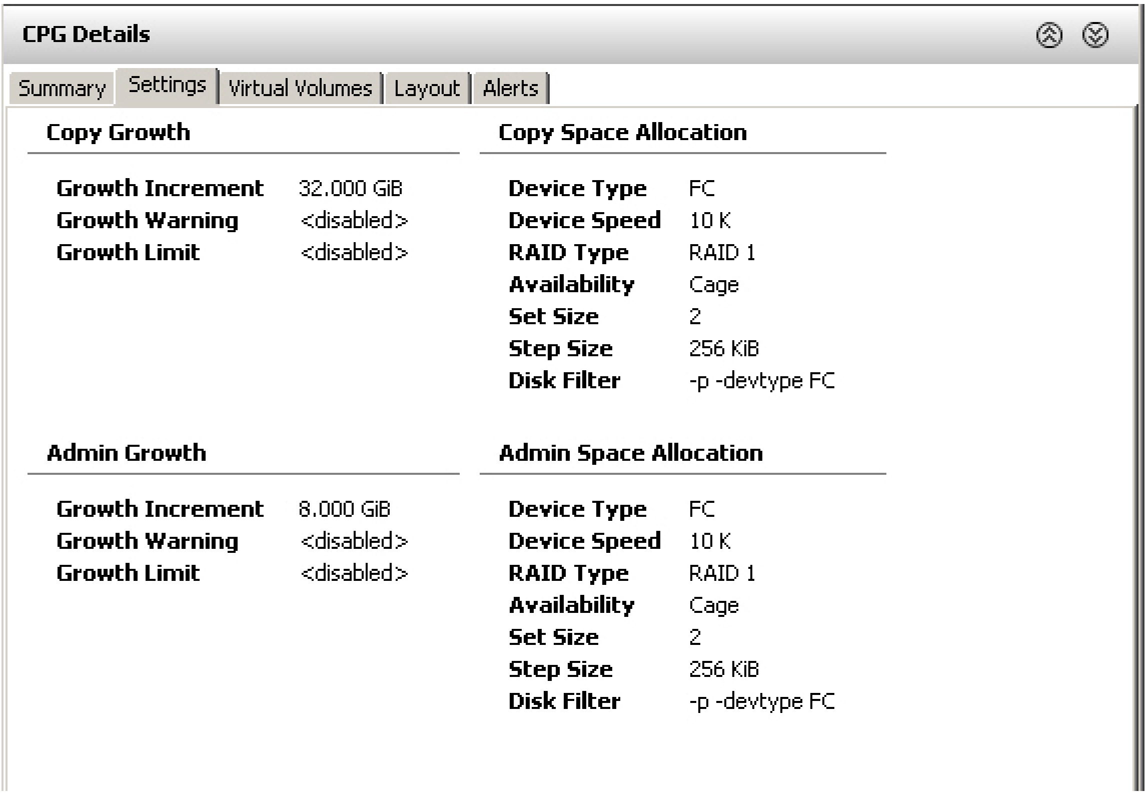
The following information is displayed on the **Summary** tab:

Group	Field	Description
General	**Name**	The Common Provisioning Group's (CPG's) name.
	Domain	The domain in which the CPG resides.
	Total VV Count	The total number of TPVVs using the CPG.
	Fully Provisioned	The number of fully provisioned volumes.

	Thinly Provisioned	The number of thinly provisioned volumes.
	User Space	The total number of VVs whose user space is using the CPG.
	Copy Space	The total number of VVs whose copy space is using the CPG.
Health	**New Alerts**	The number of new CPG alerts.
	State	The current state of the CPG. See Alert Severity Indicators.
	State Description	Description of the CPG's state.
Capacity	**Device Type**	Select the device type, Fibre Channel (**FC**), Near Line (**NL**), or Solid State Device (**SSD**). The capacity and capacity usage of the selected device type is displayed in graphical form.
	Logical	Select to display logical capacity.
	Raw	Select to display raw capacity.
Allocated	Displays mapped and unmapped allocated space.	
Mapped Space	Displays the distribution of mapped space.	

Settings Tab

The lower pane's **Settings** tab appears as follows:



Copy Growth

Growth Increment	32.000 GiB
Growth Warning	<disabled>
Growth Limit	<disabled>

Copy Space Allocation

Device Type	FC
Device Speed	10 K
RAID Type	RAID 1
Availability	Cage
Set Size	2
Step Size	256 KiB
Disk Filter	-p -devtype FC

Admin Growth

Growth Increment	8.000 GiB
Growth Warning	<disabled>
Growth Limit	<disabled>

Admin Space Allocation

Device Type	FC
Device Speed	10 K
RAID Type	RAID 1
Availability	Cage
Set Size	2
Step Size	256 KiB
Disk Filter	-p -devtype FC

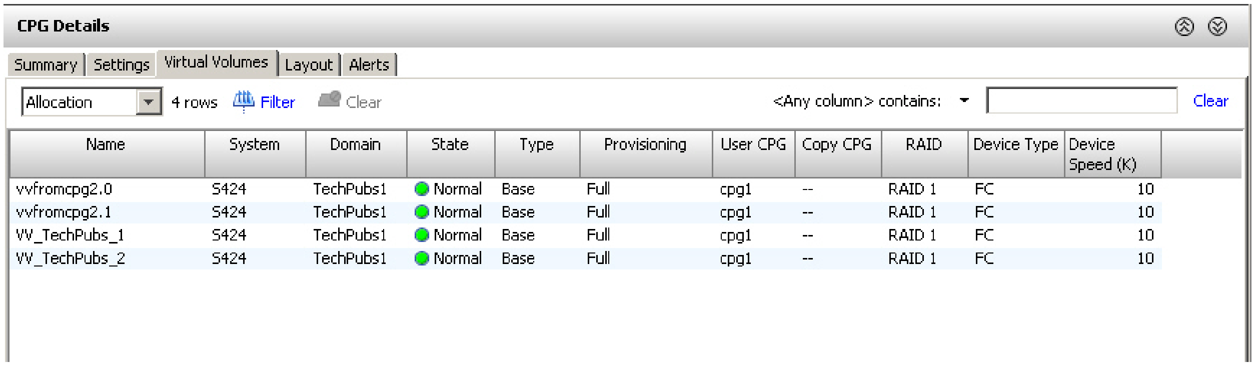
The following information is displayed on the lower pane's **Settings** tab:

Group	Field	Description
Copy Growth	**Growth Increment**	The Common Provisioning Group's (CPG's) copy space grow size in GiB.
	Growth Warning	If enabled, the CPG's growth size (in GiB) at which a warning alert is generated.
	Growth Limit	If enabled, the size limit (in GiB) after which the CPG will not grow.
Admin Growth	**Growth Increment**	The admin space grow size in GiB.
	Growth Warning	If enabled, the admin space's growth size (in GiB) at which a warning alert is generated.

	Growth Limit	If enabled, the size limit (in GiB) after which the admin space will not grow.
Copy Space Allocation and **Admin Space Allocation**	**Device Type**	Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**) drives.
	Device Speed	Speed of the disk in K RPM.
	Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
	RAID Type	The CPG's RAID type.
	Availability	The availability of **Disk**, **Port**, **Cage**, or **Mag**.
	Set Size	The set size.
	Step Size	The number of contiguous bytes in KIB.
	Disk Filter	The filtering used for the disks making up the CPG.

Virtual Volumes Tab

The **Virtual Volumes** tab displays the virtual volumes that make up the selected CPG. The **Virtual Volumes** tab appears as follows:



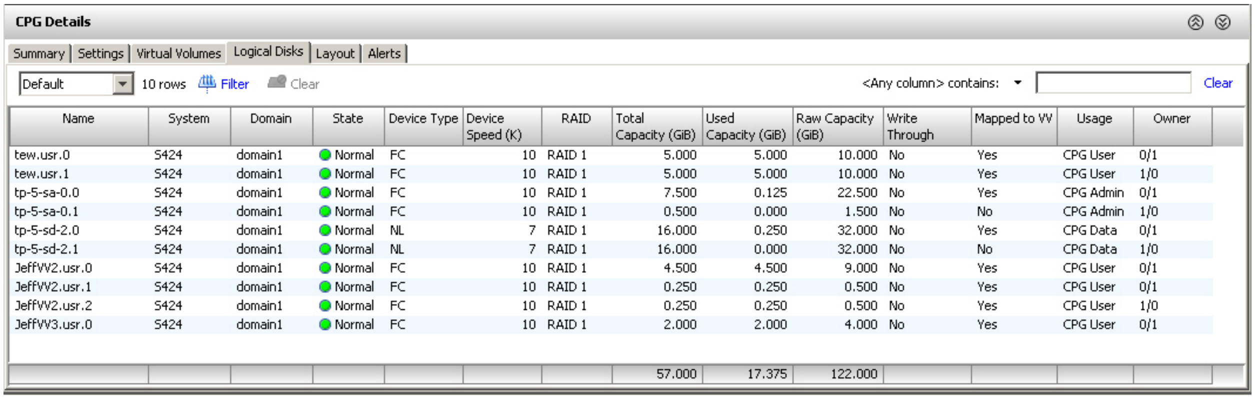
Name	System	Domain	State	Type	Provisioning	User CPG	Copy CPG	RAID	Device Type	Device Speed (K)
vvfromcpg2.0	S424	TechPubs1	● Normal	Base	Full	cpg1	--	RAID 1	FC	10
vvfromcpg2.1	S424	TechPubs1	● Normal	Base	Full	cpg1	--	RAID 1	FC	10
VV_TechPubs_1	S424	TechPubs1	● Normal	Base	Full	cpg1	--	RAID 1	FC	10
VV_TechPubs_2	S424	TechPubs1	● Normal	Base	Full	cpg1	--	RAID 1	FC	10

The following information is displayed:

Column	Description
Name	The name of the virtual volume.
System	The system on which the volume resides.
Domain	The domain in which the volume resides.
State	The current state of the volume. See System and Component Status Icons.
Type	The type of virtual volume.
Provisioning	Indicates if the selected volume is fully provisioned or a thinly provisioned virtual volume.
User CPG	The name of the Common Provisioning Group (CPG) from which user space is provisioned.
Copy CPG	The name of the CPG from which copy space is allocated.
RAID	The RAID type of the disk.
Device Type	The disk type, Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**).
Device Speed	The speed of the disk.
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	

Logical Disks Tab

The **Logical Disks** tab appears as follows:



Name	System	Domain	State	Device Type	Device Speed (K)	RAID	Total Capacity (GiB)	Used Capacity (GiB)	Raw Capacity (GiB)	Write Through	Mapped to VV	Usage	Owner
tew.usr.0	S424	domain1	● Normal	FC	10	RAID 1	5.000	5.000	10.000	No	Yes	CPG User	0/1
tew.usr.1	S424	domain1	● Normal	FC	10	RAID 1	5.000	5.000	10.000	No	Yes	CPG User	1/0
tp-5-sa-0.0	S424	domain1	● Normal	FC	10	RAID 1	7.500	0.125	22.500	No	Yes	CPG Admin	0/1
tp-5-sa-0.1	S424	domain1	● Normal	FC	10	RAID 1	0.500	0.000	1.500	No	No	CPG Admin	1/0
tp-5-sd-2.0	S424	domain1	● Normal	NL	7	RAID 1	16.000	0.250	32.000	No	Yes	CPG Data	0/1
tp-5-sd-2.1	S424	domain1	● Normal	NL	7	RAID 1	16.000	0.000	32.000	No	No	CPG Data	1/0
JeffVV2.usr.0	S424	domain1	● Normal	FC	10	RAID 1	4.500	4.500	9.000	No	Yes	CPG User	0/1
JeffVV2.usr.1	S424	domain1	● Normal	FC	10	RAID 1	0.250	0.250	0.500	No	Yes	CPG User	0/1
JeffVV2.usr.2	S424	domain1	● Normal	FC	10	RAID 1	0.250	0.250	0.500	No	Yes	CPG User	1/0
JeffVV3.usr.0	S424	domain1	● Normal	FC	10	RAID 1	2.000	2.000	4.000	No	Yes	CPG User	0/1
							57.000	17.375	122.000				

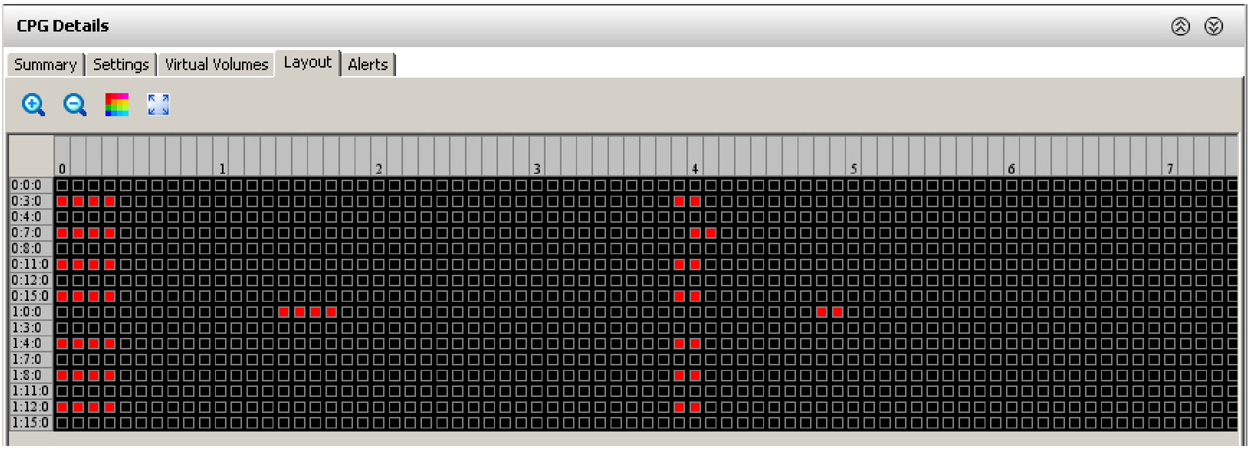
The following information is displayed on the **Logical Disks** tab:

Column	Description
Name	The name of the logical disk.
System	The system on which the logical disk resides.
Domain	The domain in which the logical disk resides.
State	The current state of the logical disk. See System and Component Status Icons.
Device Type	The disk type, Fibre Channel (**FC**),Nearline (**NL**), or Solid State (**SSD**).
Device Speed	The speed of the disk in K RPM.
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
RAID	The logical disk's RAID type.
Total Capacity	The total logical disk size in GiB.
Used Capacity	The amount of logical disk space used in GiB.

Write Through	Indicates if the logical disk is in write-through mode.
Mapped to VV	Indicates if the logical disk is mapped to a virtual volume.
Usage	Indicates the purpose for with the logical disk is used.
Owner	Specifies the owning nodes.

Layout Tab

The **Layout** tab displays the distribution of CPGs across physical disks and which chunklets are used by each CPG. The **Layout** tab appears as follows:


CPG Details
Summary
Settings
Virtual Volumes
Layout
Alerts
0
1
2
3
4
5
6
7
0:0:0
0:3:0
0:4:0
0:7:0
0:8:0
0:11:0
0:12:0
0:15:0
1:0:0
1:3:0
1:4:0
1:7:0
1:8:0
1:11:0
1:12:0
1:15:0

Alerts Tab

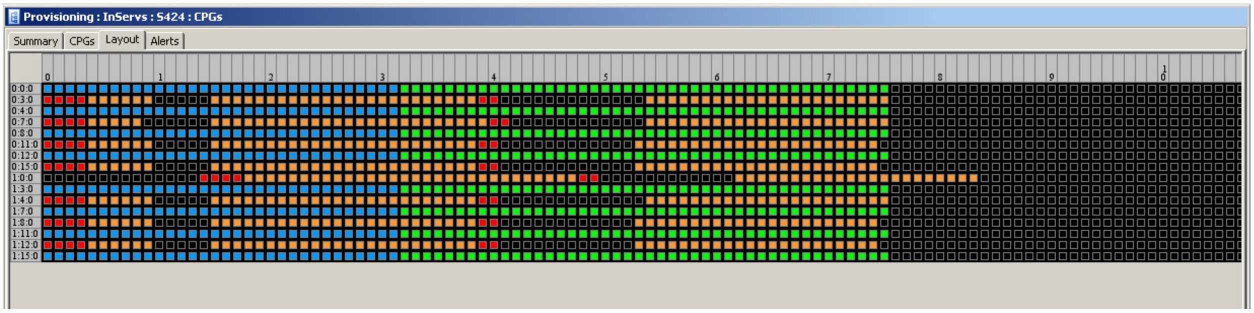
The **Alerts** tab displays a table containing alert information for a single CPG selected from the upper pane. The information displayed is identical to the information displayed in system alerts table. See Viewing System Alerts for additional information.

Viewing the Common Provisioning Group Layout Tab

To view the Common Provisioning Group (CPG) **Layout** tab:

1. Access the CPG screen.
2. In the Management Window, click the **Layout** tab.

The CPGs **Layout** tab displays the distribution of CPGs across physical disks and which chunklets are used by each CPG.


Provisioning : InServs : S424 : CPGs
Summary
CPGs
Layout
Alerts
0
1
2
3
4
5
6
7
8
9
10
0:0:0
0:3:0
0:4:0
0:7:0
0:8:0
0:11:0
0:12:0
0:15:0
1:0:0
1:3:0
1:4:0
1:7:0
1:8:0
1:11:0
1:12:0
1:15:0

Viewing the Common Provisioning Group Alerts Tab

To view the Common Provisioning Group (CPG) **Alerts** tab:

1. Access the CPG screen.
2. In the Management Window, click the **Alerts** tab.

The **Alerts** tab displays CPG-related alerts for the system. The information displayed in the provisioning **Alerts** tab is identical to the information contained in the systems **Alerts** tab.

- The **Provisioning Alerts** tab displays only CPG-related alerts.
- See Viewing System Alerts.

Creating Common Provisioning Groups

To create a Common Provisioning Group (CPG) access the **Create CPG** wizard:

1. In the Manager Pane, click **Provisioning**.
2. In the Common Actions panel, click **Create CPG**.

The **Create CPG** wizard appears.

Step 1. General

1. **System** - Select the system where the CPG will be created.
2. **Domain** - Select the domain in which the CPG will reside. Select **<none>** if not applicable.
3. **Name** - Enter a name for the new CPG.
4. **Template** - Select the CPG template to apply to the new CPG. If not required, select **<none>**.
5. **Allocation Warning** - Click the **Enabled** checkbox and enter the appropriate percentage.
6. **Growth Increment** - Click the **Enabled** checkbox, enter the appropriate value, and click the unit list (**MiB**, **GiB**, **TiB**)
7. **Growth Warning** - Click the **Enabled** checkbox, enter the appropriate value, and click the unit list (**MiB**, **GiB**, **TiB**).
8. **Growth Limit** - Click the **Enabled** checkbox, enter the appropriate value, and click the unit list (**MiB**, **GiB**, **TiB**).
9. **Device Type** - Select **FC** for Fibre Channel drives, **NL** for Nearline drives, or **SSD** for Solid State drives.
10. **Device Speed** - Select the appropriate speed or **<default>**.

> **Note:** The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.

11. **RAID Type** - Select the RAID type for the volume.
12. **Set Size** - Select the set size.
13. If you wish to configure the CPG's allocation settings and list of disks, select **Show advanced options panel(s)**.
14. Click **Next** to configure **Allocation Settings** (if enabled), or click **Finish**.

Step 2. Allocation Settings

1. From the **Availability** list, select **Cage** (default), **Port**, or **Magazine**.
2. From the **Set Size** list, select default, 32, 64, 128, 256, or 512 KiB. The default value depends on raid type and device type used. If FC or NL drives are used, the step size defaults to 256 KiB for RAID 0 and RAID 1, and 128 KiB for RAID 5. If SSD drives are used, the step size defaults to 32 KiB for RAID 0 and RAID 1, and 64 KiB for RAID 5. For RAID 6, the default is a function of the set size.
3. From the **Preferred Chunklets** list, select **Fast** (default) or **Slow**.
4. Click **Next** to use the **Disk Filter** (if enabled), or click **Finish**.

Step 3. Disk Filter

The **Disk Filter** displays the physical disks used. **Pattern** displays the parameters of the disks used.

To modify the list of disks used:

1. Click the **Filter** icon.
2. See Filtering for details.
3. Click **Next** to view summary information, or click **Finish**.

Step 4. Summary

➔Review the summary information and when satisfied, click **Finish**.

See also:

Manager Pane

Management Tree

Filtering

Editing a Common Provisioning Group

To edit a Common Provisioning Group (CPG):

1. Access the **CPGs** tab.
2. Right-click the CPG you wish to edit.
3. In the menu that appears, click **Edit**.

   The **Edit CPG** wizard appears.

Step 1. General

1. **Name** - Enter a new name for the CPG (31 character maximum).
2. **Growth Increment*** - Click the **Enabled** checkbox, enter the appropriate value, and click the unit list (**MiB**, **GiB**, **TiB**)
3. **Growth Warning*** - Click the **Enabled** checkbox, enter the appropriate value, and click the unit list (**MiB**, **GiB**, **TiB**).
4. **Growth Limit*** - Click the **Enabled** checkbox, enter the appropriate value, and click the unit list (**MB**, **GB**, **TB**).
5. **Device Type** - Select **FC** for Fibre Channel drives, **NL** for Nearline drives, or **SSD** for Solid State drives.
6. **Device Speed** - Select the appropriate speed or **<default>**.

> **Note:** The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.

7. **RAID Type** - Select the RAID type for the volume.
8. **Set Size** - Select the set size.
9. If you wish to configure the CPG's allocation settings and list of disks, select **Show advanced options panel(s)**.
10. Click **Next** to configure **Allocation Settings** (if enabled), or click **Finish**.

*Appears only if the **Show advanced options panel(s)** is selected.

Step 2. Allocation Settings

1. From the **Availability** list, select **Cage** (default), **Port**, or **Magazine**.
2. From the **Set Size** list, select default, 32, 64, 128, 256, or 512 KiB. The default value depends on raid type and device type used. If FC or NL drives are used, the step size defaults to 256 KiB for RAID 0 and RAID 1, and 128 KiB for RAID 5. If SSD drives are used, the step size defaults to 32 KiB for RAID 0 and RAID 1, and 64 KiB for RAID 5. For RAID 6, the default is a function of the set size.
3. From the **Preferred Chunklets** list, select **Fast** (default) or **Slow**.
4. Click **Next** to use the **Disk Filter** (if enabled), or click **Finish**.

Step 3. Disk Filter

The **Disk Filter** displays the physical disks used. **Pattern** displays the parameters of the disks used.

To modify the list of disks used:

1. Click the **Filter** icon.
2. See Filtering for details.
3. Click **Next** to view summary information, or click **Finish**.

Step 4. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

Viewing the CPGs Tab

Filtering

Creating Similar Common Provisioning Groups

You can create new Common Provisioning Groups (CPGs) based on existing CPGs. To do this:

1. Access the **CPGs** tab.
2. Right-click the CPG you wish to use as the basis for your new CPG.
3. In the menu that appears, click **Create Similar**.

   The **Create CPG** wizard appears.

4. Follow the instructions in Creating Common Provisioning Groups.

See also:

Viewing the CPGs Tab

Creating Common Provisioning Groups

Saving a Common Provisioning Group as a Template

You can save a Common Provisioning Groups (CPGs) as a template. To do this:

1. Access the **CPGs** tab.
2. Right-click the CPG you wish to save as a template.

3. In the menu that appears, click **Save as Template**.

   The **Create CPG Template** wizard appears.

4. Follow the instructions in Creating Common Provisioning Group Templates.

See also:

Viewing the CPGs Tab

Creating Common Provisioning Group Templates

Compacting a Common Provisioning Group

To compact a Common Provisioning Group (CPG):

1. Access the **CPGs** tab.
2. Right-click the CPG you wish to compact.
3. In the menu that appears, click **Compact CPG**.

   The **Compact CPG** wizard appears.

4. **System** - Select the system on which on the CPG resides.
5. **Domain** - Select the domain in which the CPG resides. Select **<none>** if not applicable.
6. **CPG** - Select the CPG to compact.
7. (Optional) Enable the **Trim only** option, which removes unused logical disk space without performing any region moves.
8. Click **OK**.

See also:

Viewing the CPGs Tab

Removing a Common Provisioning Group

To remove a Common Provisioning Group (CPG):

1. Access the **CPGs** tab.
2. Right-click the CPG you wish to remove.
3. In the menu that appears, click **Remove**.

The **Remove CPG** dialog box appears.

4. Click **OK**.

See also:

Viewing the CPGs Tab

Working with Virtual Volumes

The **Provisioning Manager** allows you to perform all tasks associated with system volumes, from their creation, to their maintenance, and ultimately, their removal. The following topics are provided:

Viewing Virtual Volumes

Creating Virtual Volumes

Editing Virtual Volumes

Creating Similar Virtual Volumes

Saving a Virtual Volume as a Template

Exporting Virtual Volumes

Creating a Remote Copy Group from Virtual Volumes

Adding a Virtual Volume to a Remote Copy Group

Moving a Virtual Volume to Another Domain

Removing Virtual Volumes

Tuning Virtual Volumes

Restarting Tuning a Virtual Volume

Rolling Back a Tuned Virtual Volume

Viewing Virtual Volumes

To view a system's virtual volumes:

1. In the Manager Pane, click **Provisioning**.
2. In the Management Tree, click **Virtual Volumes** under the system node you wish to view.

The **Provisioning-Virtual Volumes** screen appears in the Management Window, provides information about system virtual volumes on three tabs, **Summary**, **Virtual Volumes**, and **Alerts**, which are explained in the following topics:

- Viewing the Virtual Volumes Summary Tab
- Viewing the Virtual Volumes Tab
- Viewing the Virtual Volumes Alerts Tab

> **Note:** In addition to providing comprehensive information about a system's virtual volumes, the InForm Management Console also allows you to view the same type of information for specific types of volumes. Each child node under the **Virtual Volumes** node in the Management Tree is a specific type of virtual volume. These include **Remote Copy** volumes, **Exported** volumes, **Unexported** volumes, volumes **By Device Type**, and volumes **By RAID Type**. The format and type of the information displayed is identical to that displayed under the **Virtual Volumes** node.

See also:

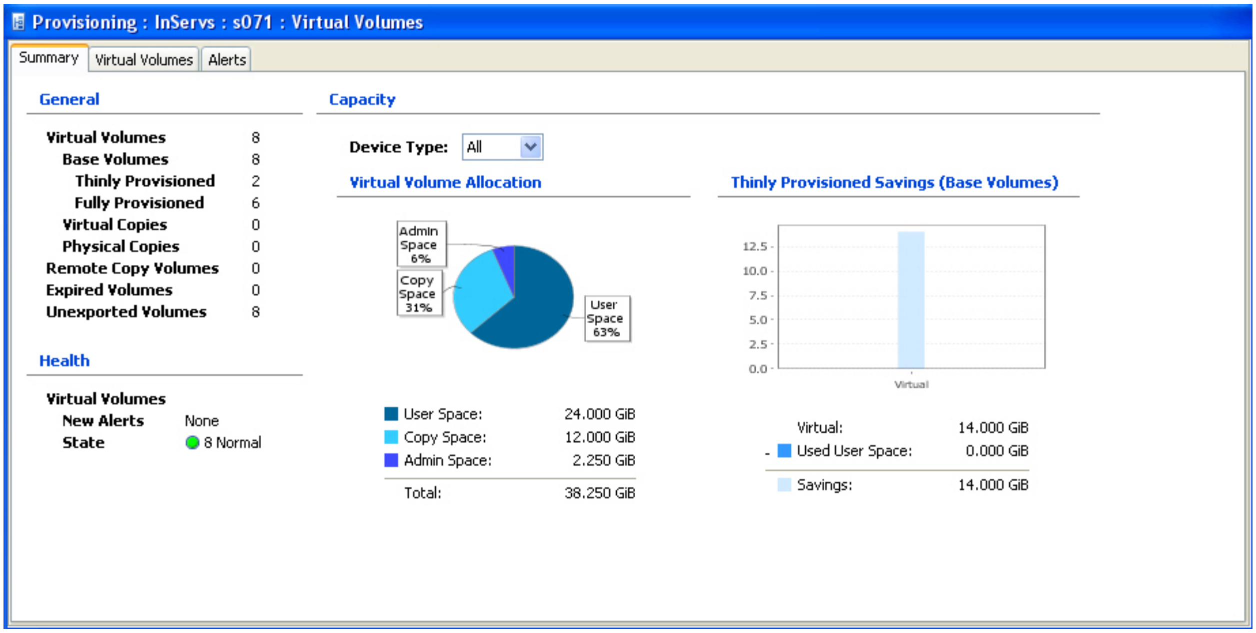
- Manager Pane
- Management Tree

Viewing the Virtual Volumes Summary Tab

To view the virtual volume **Summary** tab:

1. Access the virtual volume screen.
2. In the Management Window, click the **Summary** tab.

The **Summary** tab provides information about virtual volumes in the system.


Provisioning : InServs : s071 : Virtual Volumes
Summary
Virtual Volumes
Alerts
Admin Space 6%
Copy Space 31%
User Space 63%
12.5
10.0
7.5
5.0
2.5
0.0
Virtual

General

Virtual Volumes	8
Base Volumes	8
Thinly Provisioned	2
Fully Provisioned	6
Virtual Copies	0
Physical Copies	0
Remote Copy Volumes	0
Expired Volumes	0
Unexported Volumes	8

Health

Virtual Volumes

New Alerts	None
State	● 8 Normal

Capacity

Device Type: All

Virtual Volume Allocation

User Space:	24.000 GiB
Copy Space:	12.000 GiB
Admin Space:	2.250 GiB
Total:	38.250 GiB

Thinly Provisioned Savings (Base Volumes)

Virtual:	14.000 GiB
Used User Space:	0.000 GiB
Savings:	14.000 GiB

The following information is displayed:

Group	Field	Description
General	**Virtual Volumes**	The total number of virtual volumes.
	Base Volumes	The total number of base volumes.
	Thinly Provisioned	The number of thinly provisioned virtual volumes.
	Fully Provisioned	The number of fully provisioned virtual volumes
	Virtual Copies	The total number of virtual copies.
	Physical Copies	The total number of physical copies.
	Remote Copy Volumes	The total number of Remote Copy virtual volumes.
	Expired Volumes	The total number of expired virtual volumes.

	Unexported Volumes	The total number of unexported virtual volumes.
Health	**New Alerts**	The total number of new alerts.
	State	The current state. See System and Component Status Icons.
Capacity	**Device Type**	Select the device type, Fibre Channel (**FC**), Near Line (**NL**), or Solid State Device (**SSD**). The capacity and capacity usage of the selected device type is displayed in graphical form.
Virtual Volume Allocation	Displays the allocation of admin, copy, and user space.	
Thinly Provisioned Savings (Base Volumes)	Displays the amount of space saved through thinly provisioned virtual volumes.	

See also:

Manager Pane

Management Tree

Viewing Virtual Volumes

System and Component Status Icons

Viewing the Virtual Volumes Tab

To view the **Virtual Volumes** tab:

1. Access the virtual volume screen.
2. In the Management Window, click the **Virtual Volumes** tab.

The **Virtual Volumes** tab presents information in an upper pane and lower pane.

Upper_Pane

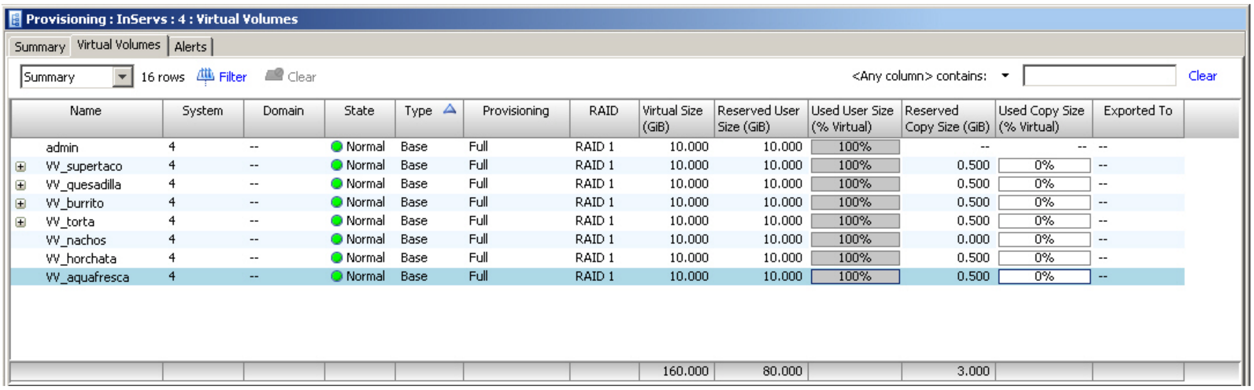
Lower_Pane

Upper Pane

The table in the upper pane can be filtered to display Summary, Allocation, Capacity, Raw Capacity, History, and Remote Copy information.

Displaying Summary Information

➡To view summary information, select **Summary** from the filtering list. The summary information appears as follows:



Name	System	Domain	State	Type	Provisioning	RAID	Virtual Size (GiB)	Reserved User Size (GiB)	Used User Size (% Virtual)	Reserved Copy Size (GiB)	Used Copy Size (% Virtual)	Exported To
admin	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	--	--	--
⊞ VV_supertaco	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
⊞ VV_quesadilla	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
⊞ VV_burrito	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
⊞ VV_torta	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
VV_nachos	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.000	0%	--
VV_horchata	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
VV_aquafresca	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
							160.000	80.000		3.000		

The following information is displayed:

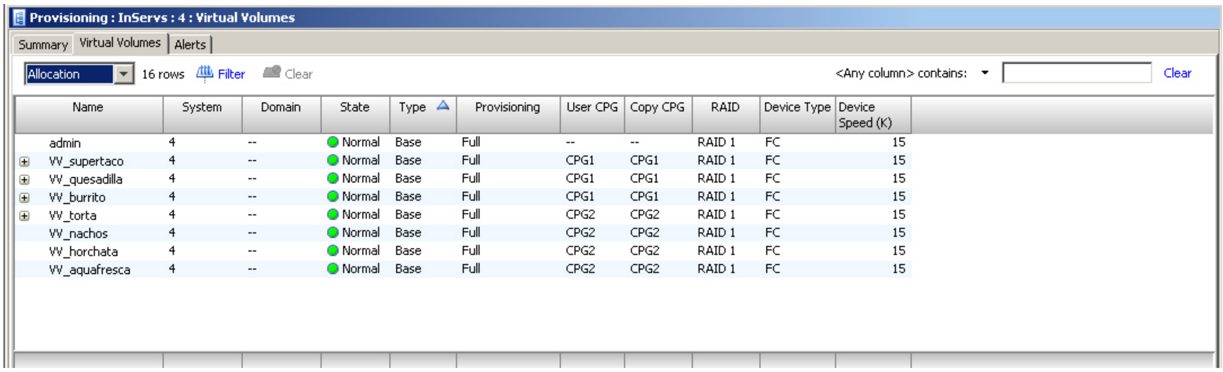
Column	Description
Name	The volume name.
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
State	The state of the system.
Type	Indicates if the volume is a base volume, physical copy, or virtual copy.
Provisioning	Indicates if the volume is fully (**Full**) or thinly provisioned (**TPVV**).
RAID	The volume's RAID type.
Virtual Size	The size of the volume in GiB.
Reserved User Size	The size of the volume's reserved user space in GiB.

Used User Size	The percentage of used user space.
Reserved Copy Size	The size of the volume's reserved copy space.
Used Copy Size	The percentage of used copy space.
Exported To	The host to which the volume is exported. A red entry indicates an inactive VLUN. A blue entry indicates an active VLUN.

Virtual volumes are displayed in a parent/child hierarchy. A volume displayed with a plus (+) icon indicates that there are virtual or physical copies (children) of that volume. The child volumes can be displayed by clicking the plus icon.

Displaying Allocation Information

➡ To view allocation information, select **Allocation** from the filtering list. The allocation information appears as follows:



	Name	System	Domain	State	Type	Provisioning	User CPG	Copy CPG	RAID	Device Type	Device Speed (K)
	admin	4	--	● Normal	Base	Full	--	--	RAID 1	FC	15
⊞	VV_supertaco	4	--	● Normal	Base	Full	CPG1	CPG1	RAID 1	FC	15
⊞	VV_quesadilla	4	--	● Normal	Base	Full	CPG1	CPG1	RAID 1	FC	15
⊞	VV_burrito	4	--	● Normal	Base	Full	CPG1	CPG1	RAID 1	FC	15
⊞	VV_torta	4	--	● Normal	Base	Full	CPG2	CPG2	RAID 1	FC	15
	VV_nachos	4	--	● Normal	Base	Full	CPG2	CPG2	RAID 1	FC	15
	VV_horchata	4	--	● Normal	Base	Full	CPG2	CPG2	RAID 1	FC	15
	VV_aquafresca	4	--	● Normal	Base	Full	CPG2	CPG2	RAID 1	FC	15

The following information is displayed:

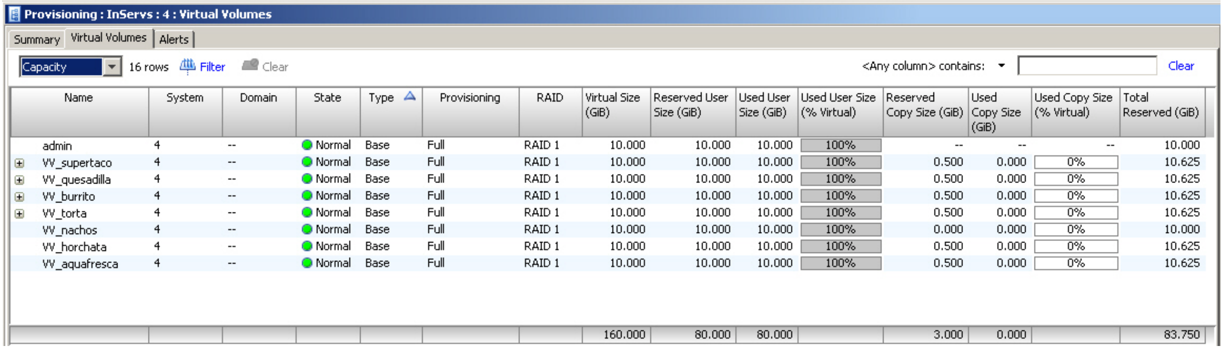
Column	Description
Name	The volume name.
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
State	The state of the system.
Type	Indicates if the volume is a base volume, physical copy, or virtual copy.

Provisioning	Indicates if the volume is fully (**Full**) or thinly provisioned (**TPVV**).
User CPG	The name of the Common Provisioning Group (CPG) used for user space.
Copy CPG	The name of the Common Provisioning Group (CPG) used for copy space.
RAID	The volume's RAID type.
Device Type	The type of physical disk, either Fibre Channel (**FC**), Near Line (**NL**), or Solid State (**SSD**).
Device Speed	The disk speed.

NOTE: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.

Displaying Capacity Information

➜To view capacity information, select **Capacity** from the filtering list. The capacity information appears as follows:



Name	System	Domain	State	Type	Provisioning	RAID	Virtual Size (GiB)	Reserved User Size (GiB)	Used User Size (GiB)	Used User Size (% Virtual)	Reserved Copy Size (GiB)	Used Copy Size (GiB)	Used Copy Size (% Virtual)	Total Reserved (GiB)
admin	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	10.000	100%	--	--	--	10.000
⊞ VV_supertaco	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	10.000	100%	0.500	0.000	0%	10.625
⊞ VV_quesadilla	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	10.000	100%	0.500	0.000	0%	10.625
⊞ VV_burrito	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	10.000	100%	0.500	0.000	0%	10.625
⊞ VV_torta	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	10.000	100%	0.500	0.000	0%	10.625
VV_nachos	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	10.000	100%	0.000	0.000	0%	10.000
VV_horchata	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	10.000	100%	0.500	0.000	0%	10.625
VV_aquafresca	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	10.000	100%	0.500	0.000	0%	10.625
							160.000	80.000	80.000		3.000	0.000		83.750

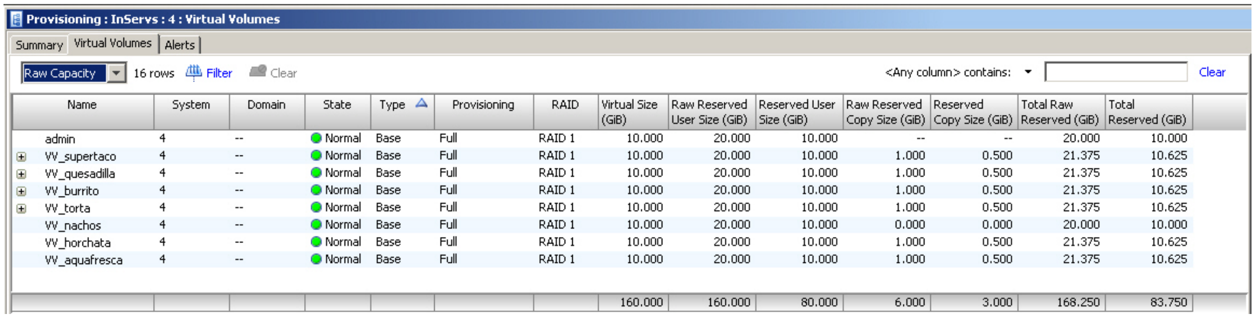
The following information is displayed:

Column	Description
Name	The volume name.
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.

State	The state of the system.
Type	Indicates if the volume is a base volume, physical copy, or virtual copy.
Provisioning	Indicates if the volume is fully (**Full**) or thinly provisioned (**TPVV**).
RAID	The volume's RAID type.
Virtual Size	The size of the volume in GiB.
Reserved User Size	The size of the volume's reserved user space in GiB.
Used User Size	The amount of used user space in GiB.
Used User Size (%)	The percentage of used user space.
Reserved Copy Size	The size of the volume's reserved copy space in GiB.
Used Copy Size	The amount of used copy space in GiB.
Used Copy Size (%)	The percentage of used copy space.
Total Reserved	The total amount of reserved space in GiB.

Displaying Raw Capacity Information

To view raw capacity information, select **Raw Capacity** from the filtering list. The raw capacity information appears as follows:



Name	System	Domain	State	Type	Provisioning	RAID	Virtual Size (GiB)	Raw Reserved User Size (GiB)	Reserved User Size (GiB)	Raw Reserved Copy Size (GiB)	Reserved Copy Size (GiB)	Total Raw Reserved (GiB)	Total Reserved (GiB)
admin	4	--	● Normal	Base	Full	RAID 1	10.000	20.000	10.000	--	--	20.000	10.000
⊞ VV_supertaco	4	--	● Normal	Base	Full	RAID 1	10.000	20.000	10.000	1.000	0.500	21.375	10.625
⊞ VV_quesadilla	4	--	● Normal	Base	Full	RAID 1	10.000	20.000	10.000	1.000	0.500	21.375	10.625
⊞ VV_burrito	4	--	● Normal	Base	Full	RAID 1	10.000	20.000	10.000	1.000	0.500	21.375	10.625
⊞ VV_torta	4	--	● Normal	Base	Full	RAID 1	10.000	20.000	10.000	1.000	0.500	21.375	10.625
VV_nachos	4	--	● Normal	Base	Full	RAID 1	10.000	20.000	10.000	0.000	0.000	20.000	10.000
VV_horchata	4	--	● Normal	Base	Full	RAID 1	10.000	20.000	10.000	1.000	0.500	21.375	10.625
VV_aquafresca	4	--	● Normal	Base	Full	RAID 1	10.000	20.000	10.000	1.000	0.500	21.375	10.625
							160.000	160.000	80.000	6.000	3.000	168.250	83.750

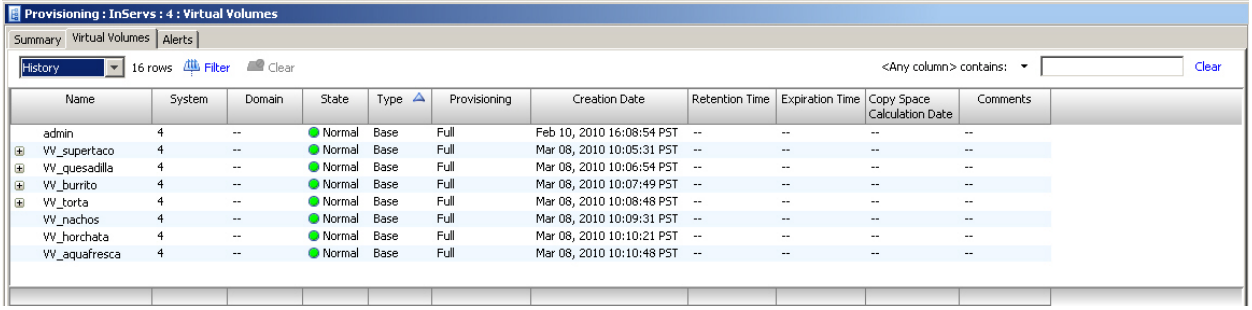
The following information is displayed:

Column	Description
Name	The volume name.
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
State	The state of the system.
Type	Indicates if the volume is a base volume, physical copy, or virtual copy.
Provisioning	Indicates if the volume is fully (**Full**) or thinly provisioned (**TPVV**).
RAID	The volume's RAID type.
Virtual Size	The size of the volume in GiB.
Raw Reserved User Size	The size of the volume's reserved raw user space in GiB.
Reserved User Size	The size of the volume's reserved user space in GiB.
Raw Reserved Copy Size	The size of the volume's reserved raw copy space in GiB.
Reserved Copy Size	The size of the volume's reserved copy space in GiB.

Total Raw Reserved	The total amount of reserved raw space in GiB.
Total Reserved	The total amount of reserved space in GiB.

Displaying History Information

To view history information, select **History** from the filtering list. The history information appears as follows:



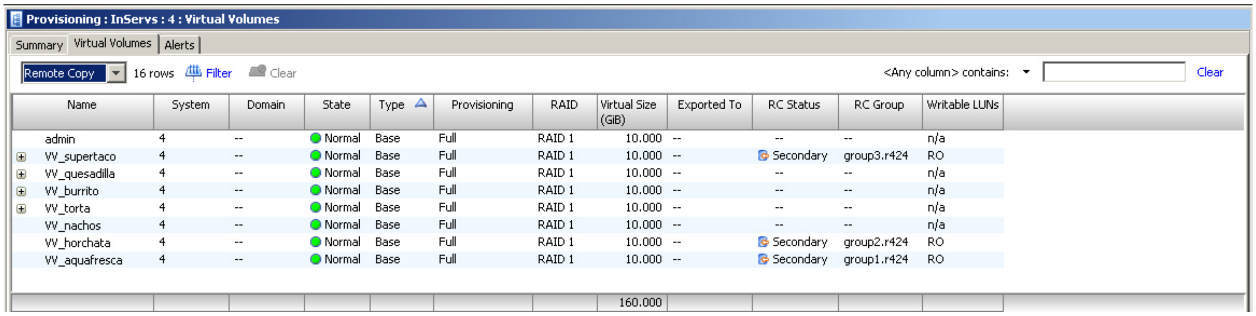
Name	System	Domain	State	Type	Provisioning	Creation Date	Retention Time	Expiration Time	Copy Space Calculation Date	Comments
admin	4	--	● Normal	Base	Full	Feb 10, 2010 16:08:54 PST	--	--	--	--
⊞ VV_supertaco	4	--	● Normal	Base	Full	Mar 08, 2010 10:05:31 PST	--	--	--	--
⊞ VV_quesadilla	4	--	● Normal	Base	Full	Mar 08, 2010 10:06:54 PST	--	--	--	--
⊞ VV_burrito	4	--	● Normal	Base	Full	Mar 08, 2010 10:07:49 PST	--	--	--	--
⊞ VV_torta	4	--	● Normal	Base	Full	Mar 08, 2010 10:08:48 PST	--	--	--	--
VV_nachos	4	--	● Normal	Base	Full	Mar 08, 2010 10:09:31 PST	--	--	--	--
VV_horchata	4	--	● Normal	Base	Full	Mar 08, 2010 10:10:21 PST	--	--	--	--
VV_aquafresca	4	--	● Normal	Base	Full	Mar 08, 2010 10:10:48 PST	--	--	--	--

The following information is displayed:

Column	Description
Name	The volume name.
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
State	The state of the system.
Type	Indicates if the volume is a base volume, physical copy, or virtual copy.
Creation Date	The date and time the volume was created.
Retention Time	If set during creation, the date and time the volume is retained.
Expiration Time	If set during creation, The date and time the volume expires.
Copy Space Calculation Date	The date and time copy space was calculated.
Comments	Any comments about the volume.

Displaying Remote Copy Information

➡To view Remote Copy information, select **Remote Copy** from the filtering list. The Remote Copy information appears as follows:



Remote Copy 16 rows

Name	System	Domain	State	Type	Provisioning	RAID	Virtual Size (GiB)	Exported To	RC Status	RC Group	Writable LUNs
admin	4	--	Normal	Base	Full	RAID 1	10.000	--	--	--	n/a
VV_supertaco	4	--	Normal	Base	Full	RAID 1	10.000	--	Secondary	group3.r424	RO
VV_quesadilla	4	--	Normal	Base	Full	RAID 1	10.000	--	--	--	n/a
VV_burrito	4	--	Normal	Base	Full	RAID 1	10.000	--	--	--	n/a
VV_torta	4	--	Normal	Base	Full	RAID 1	10.000	--	--	--	n/a
VV_nachos	4	--	Normal	Base	Full	RAID 1	10.000	--	--	--	n/a
VV_horchata	4	--	Normal	Base	Full	RAID 1	10.000	--	Secondary	group2.r424	RO
VV_aquafresca	4	--	Normal	Base	Full	RAID 1	10.000	--	Secondary	group1.r424	RO
							160.000				

The following information is displayed:

Column	Description
Name	The volume name.
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
State	The state of the system.
Type	Indicates if the volume is a base volume, physical copy, or virtual copy.
Provisioning	Indicates if the volume is fully (**Full**) or thinly provisioned (**TPVV**).
RAID	The volume's RAID type.
Exported To	The host to which the volume is exported. A red entry indicates an inactive VLUN. A blue entry indicates an active VLUN.
RC Status	The volume's Remote Copy status.
RC Group	The Remote Copy group to which the volume belongs.
Writable LUNs	Writable LUNs, if any.

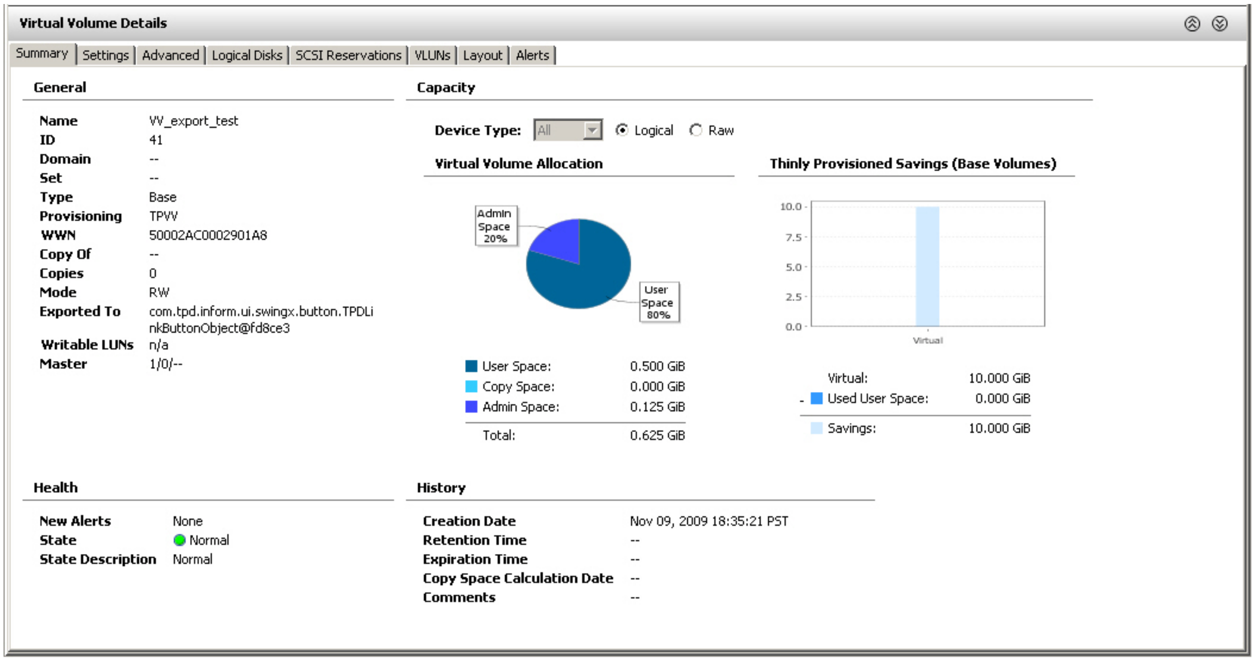
Lower Pane

The lower pane displays detailed information about a single virtual volume selected from the upper pane. The lower pane displays information on eight tabs, **Summary**, **Settings**, **Advanced**, **Logical Disks**, **SCSI Reservations**, **VLUNs**, **Layout**, and **Alerts**.

Note: The Advanced, Logical Disks, and SCSI Reservations tabs are advanced features and are only displayed if they have been set to display in your preferences. See Setting Global Preferences.

Summary Tab

The lower pane's **Summary** tab appears as follows:



General

Name	VV_export_test
ID	41
Domain	--
Set	--
Type	Base
Provisioning	TPVV
WWN	50002AC0002901A8
Copy Of	--
Copies	0
Mode	RW
Exported To	com.tpd.inform.ui.swingx.button.TPDLinkButtonObject@fd8ce3
Writable LUNs	n/a
Master	1/0/--

Capacity

Device Type: All ● Logical ○ Raw

Virtual Volume Allocation

User Space:	0.500 GiB
Copy Space:	0.000 GiB
Admin Space:	0.125 GiB
Total:	0.625 GiB

Thinly Provisioned Savings (Base Volumes)

Virtual:	10.000 GiB
- Used User Space:	0.000 GiB
Savings:	10.000 GiB

Health

New Alerts	None
State	● Normal
State Description	Normal

History

Creation Date	Nov 09, 2009 18:35:21 PST
Retention Time	--
Expiration Time	--
Copy Space Calculation Date	--
Comments	--

The following information is displayed in the lower pane's **Summary** tab:

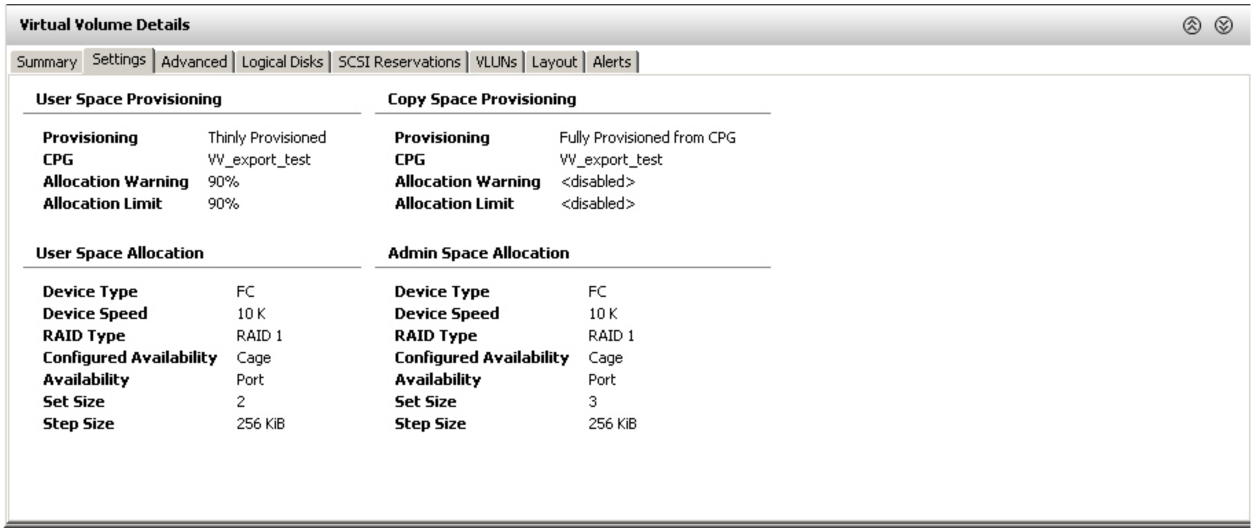
Group	Field	Description
General	**Name**	The virtual volume's name.
	ID	The virtual volume ID.
	Domain	The domain in which the volume resides.

	Set	The name of the volume set to which the volume belongs.
	Type	The type of volume (**Base**, **Physical Copy**, **Virtual Copy**).
	Provisioning	Indicates if the selected volume is fully provisioned or a thinly provisioned virtual volume.
	WWN	The volume's World Wide Name (WWN).
	Copy Of	The volume from which the selected volume was copied.
	Copies	The number of copies of the selected volume.
	Mode	Indicates if the volume is read-only (**RO**) or read-write (**RW**).
	Exported To	The host on which the volume is exported.
	Writable LUNS	Indicates if the LUN is writable from the host.
	Master	The master node of the volume (responsible for assigning mapping zones).
Health	**New Alerts**	The number of new virtual volume alerts.
	State	The current state of the virtual volume. See Alert Severity Indicators.
	State Description	Description of the virtual volume's state.
Capacity	**Device Type**	Select the device type, Fibre Channel (**FC**), Near Line (**NL**), or Solid State Device (**SSD**). The capacity and capacity usage of the selected device type is displayed in graphical form.
	Logical	Select to display logical capacity.
	Raw	Select to display raw capacity.
Virtual Volume Allocation	Displays the allocation of the volume's admin, copy, and user space.	
Thinly Provisioned Savings (Base	Displays the amount of space saved through thinly provisioned virtual volumes.	

Volumes)		
History	**Creation Date**	The volume's creation date.
	Retention Time	The volume's retention time, if any.
	Expiration Time	The volume's expiration date, if any.
	Copy Space Calculation Date	The date on which the volume's copy space was calculated.
	Comments	Any comments about the volume.

Settings Tab

The lower pane's **Settings** tab appears as follows:



User Space Provisioning

Provisioning	Thinly Provisioned
CPG	VV_export_test
Allocation Warning	90%
Allocation Limit	90%

Copy Space Provisioning

Provisioning	Fully Provisioned from CPG
CPG	VV_export_test
Allocation Warning	<disabled>
Allocation Limit	<disabled>

User Space Allocation

Device Type	FC
Device Speed	10 K
RAID Type	RAID 1
Configured Availability	Cage
Availability	Port
Set Size	2
Step Size	256 KiB

Admin Space Allocation

Device Type	FC
Device Speed	10 K
RAID Type	RAID 1
Configured Availability	Cage
Availability	Port
Set Size	3
Step Size	256 KiB

The following information is displayed in the lower pane's **Settings** tab:

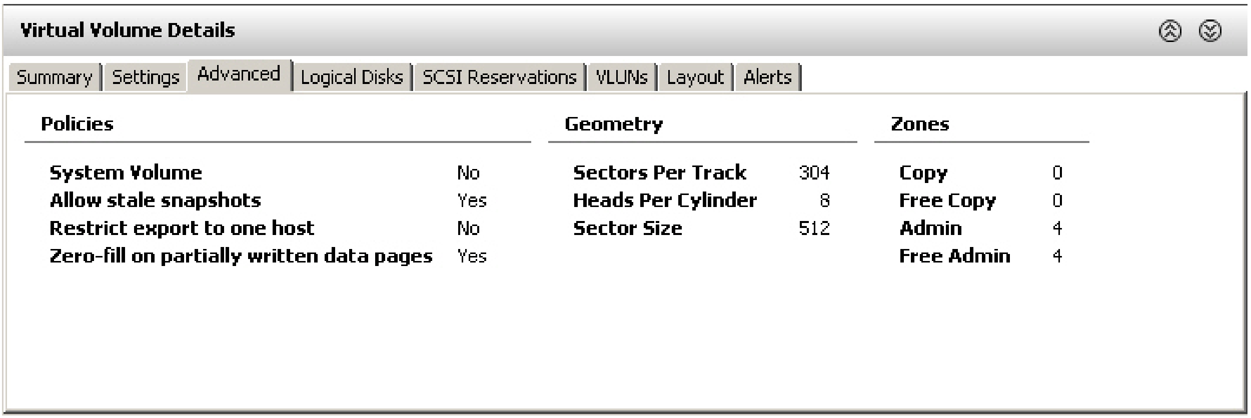
Group	Field	Description
User Space Provisioning	**Provisioning**	Indicates if the selected volume is fully provisioned or a thinly provisioned virtual volume.
	CPG	The name of the Common Provisioning Group (CPG) from which user space is provisioned.
	Allocation Warning	If enabled, the allocation warning percentage.
	Allocation Limit	If enabled, the allocation limit.

User Space Allocation	**Device Type**	The disk type, Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**).
	Device Speed	The speed of the disk.
	NOTE: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
	RAID Type	The RAID type of the disk.
	Configured Availability	The availability characteristics.
	Availability	The availability of **Disk**, **Port**, **Cage**, or **Mag**.
	Set Size	The set size.
	Step Size	The number of contiguous bytes in KIB.
Copy Space Provisioning	**Provisioning**	Indicates if the selected volume is fully provisioned or a thinly provisioned virtual volume.
	CPG	The name of the Common Provisioning Group (CPG) from which user space is provisioned.
	Allocation Warning	If enabled, the allocation warning percentage.
	Allocation Limit	If enabled, the allocation limit.
Admin Space Allocation	**Device Type**	The disk type, Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**).
	Device Speed	The speed of the disk.
	NOTE: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
	RAID Type	The RAID type of the disk.
	Configured Availability	The availability characteristics.
	Availability	The availability of **Disk**, **Port**, **Cage**, or **Mag**.
	Set Size	The set size.

	Step Size	The number of contiguous bytes in KIB.

Advanced Tab

The lower pane's **Advanced** tab appears as follows:



Policies

System Volume	No
Allow stale snapshots	Yes
Restrict export to one host	No
Zero-fill on partially written data pages	Yes

Geometry

Sectors Per Track	304
Heads Per Cylinder	8
Sector Size	512

Zones

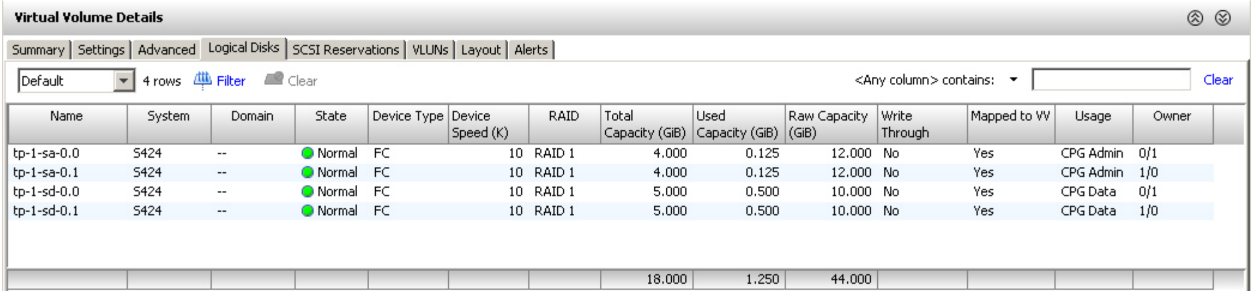
Copy	0
Free Copy	0
Admin	4
Free Admin	4

The following information is displayed in the lower pane's **Advanced** tab:

Group	Field	Description
Policies	**System Volume**	Indicates if the volume is a system volume.
	Allow stale snapshots	Indicates if stale snapshots are allowed.
	Restrict export to one host	Indicates if exporting is restricted to only one host.
	Zero-fill on partially written data pages	Indicates if the zero-fill on partially written data pages policy is enabled.
Geometry	**Sectors Per Track**	The number of sectors per track.
	Heads Per Cylinder	The number of heads per cylinder.
	Sector Size	The size of each sector in MB.
Zones	**Copy**	The number of copy zones.
	Free Copy	The number of free copy zones.
	Admin	The number of admin space zones.
	Free Admin	The number of free admin space zones.

Logical Disks Tab

The lower pane's **Logical Disks** tab appears as follows:



Name	System	Domain	State	Device Type	Device Speed (K)	RAID	Total Capacity (GiB)	Used Capacity (GiB)	Raw Capacity (GiB)	Write Through	Mapped to VV	Usage	Owner
tp-1-sa-0.0	S424	--	● Normal	FC	10	RAID 1	4.000	0.125	12.000	No	Yes	CPG Admin	0/1
tp-1-sa-0.1	S424	--	● Normal	FC	10	RAID 1	4.000	0.125	12.000	No	Yes	CPG Admin	1/0
tp-1-sd-0.0	S424	--	● Normal	FC	10	RAID 1	5.000	0.500	10.000	No	Yes	CPG Data	0/1
tp-1-sd-0.1	S424	--	● Normal	FC	10	RAID 1	5.000	0.500	10.000	No	Yes	CPG Data	1/0
							18.000	1.250	44.000				

The following information appears in the lower pane's **Logical Disks** tab:

<table>
<tr><th>Column</th><th>Description</th></tr>
<tr><td>Name</td><td>The name of the logical disk.</td></tr>
<tr><td>System</td><td>The system on which the logical disk resides.</td></tr>
<tr><td>Domain</td><td>The domain in which the logical disk resides.</td></tr>
<tr><td>State</td><td>The current state of the logical disk. See System and Component Status Icons.</td></tr>
<tr><td>Device Type</td><td>The disk type, Fibre Channel (FC),Nearline (NL), or Solid State (SSD).</td></tr>
<tr><td>Device Speed</td><td>The speed of the disk in K RPM.</td></tr>
<tr><td colspan="2">Note: The Device Speed number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.</td></tr>
<tr><td>RAID</td><td>The logical disk's RAID type.</td></tr>
<tr><td>Total Capacity</td><td>The total logical disk size in GiB.</td></tr>
<tr><td>Used Capacity</td><td>The amount of logical disk space used in GiB.</td></tr>
</table>

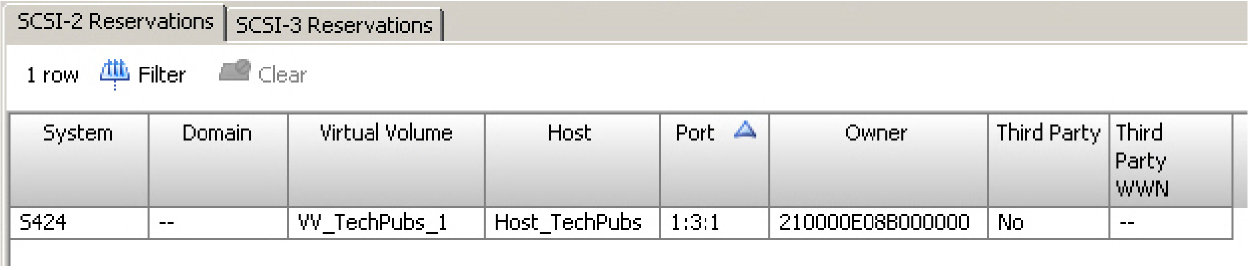
Write Through	Indicates if the logical disk is in write-through mode.
Mapped to VV	Indicates if the logical disk is mapped to a virtual volume.
Usage	Indicates the purpose for with the logical disk is used.
Owner	Specifies the owning nodes.

SCSI Reservations Tab

The **SCSI Reservations** tab provides two sub-tabs, **SCSI-2 Reservations** and **SCSI-3 Reservations**.

SCSI-2 Reservations Tab

The **SCSI-2 Reservations** tab appears as follows:



System	Domain	Virtual Volume	Host	Port	Owner	Third Party	Third Party WWN
S424	--	VV_TechPubs_1	Host_TechPubs	1:3:1	210000E08B000000	No	--

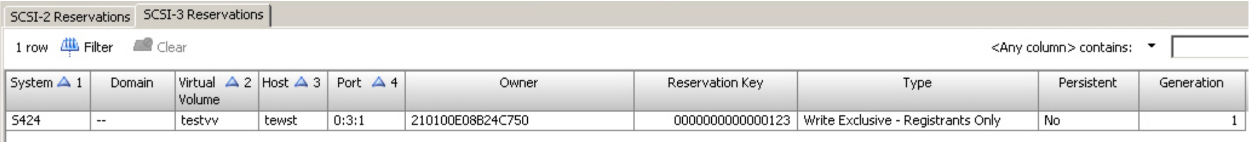
The following information is displayed in the **SCSI-2 Reservations** tab:

Column	Description
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
Virtual Volume	The name of the virtual volume.
Host	The name of the host with the SCSI-2 reservation.
Port	The port that received the SCSI-2 reservation.
Owner	The host's World-Wide Name (WWN).

Third Party	Indicates whether the SCSI reservation is a third party reservation.
Third Party WWN	The WWN of the initiator that has a third party reservation.

SCSI-3 Reservations Tab

The **SCSI-3 Reservations** tab appears as follows:



System 1	Domain	Virtual Volume 2	Host 3	Port 4	Owner	Reservation Key	Type	Persistent	Generation
S424	--	testvv	tewst	0:3:1	210100E08B24C750	0000000000000123	Write Exclusive - Registrants Only	No	1

The following information is displayed in the **SCSI-3 Reservations** tab:

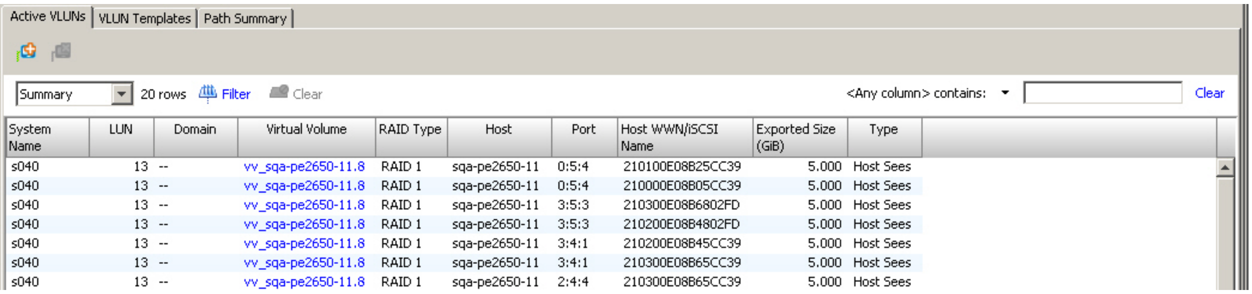
Column	**Description**
System	The name of the InServ Storage Server.
Domain	The domain to which the virtual volume belongs.
Virtual Volume	The name of the virtual volume.
Host	The name of the host with the SCSI-3 reservation.
Port	The port with the SCSI-3 reservation.
Owner	The host's World-Wide Name (WWN).
Reservation Key	The service action reservation key.
Type	The persistent reservation type.
Persistent	Whether the reservation type is persistent.
Generation	the generation number of the most recent reservation.

VLUNs Tab

The lower pane's **VLUNs** tab provides three sub-tabs, **Active LUNs**, **VLUN Templates**, and **Path Summary**.

Active LUNs Tab

The **Active LUNs** tab appears as follows:



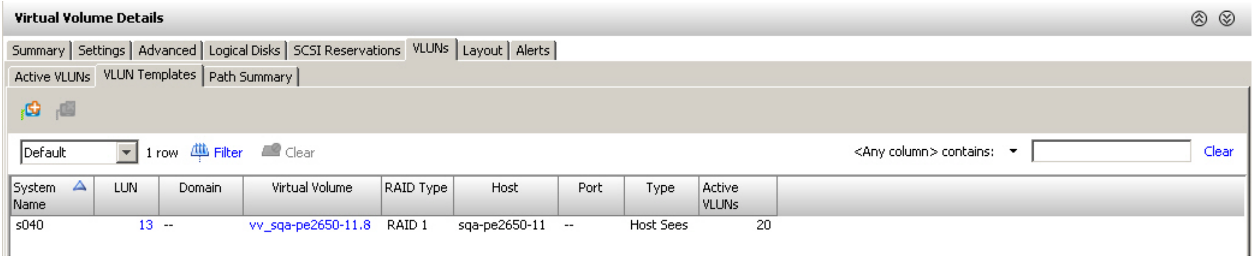
System Name	LUN	Domain	Virtual Volume	RAID Type	Host	Port	Host WWN/iSCSI Name	Exported Size (GiB)	Type
s040	13	--	vv_sqa-pe2650-11.8	RAID 1	sqa-pe2650-11	0:5:4	210100E08B25CC39	5.000	Host Sees
s040	13	--	vv_sqa-pe2650-11.8	RAID 1	sqa-pe2650-11	0:5:4	210000E08B05CC39	5.000	Host Sees
s040	13	--	vv_sqa-pe2650-11.8	RAID 1	sqa-pe2650-11	3:5:3	210300E08B6802FD	5.000	Host Sees
s040	13	--	vv_sqa-pe2650-11.8	RAID 1	sqa-pe2650-11	3:5:3	210200E08B4802FD	5.000	Host Sees
s040	13	--	vv_sqa-pe2650-11.8	RAID 1	sqa-pe2650-11	3:4:1	210200E08B45CC39	5.000	Host Sees
s040	13	--	vv_sqa-pe2650-11.8	RAID 1	sqa-pe2650-11	3:4:1	210300E08B65CC39	5.000	Host Sees
s040	13	--	vv_sqa-pe2650-11.8	RAID 1	sqa-pe2650-11	2:4:4	210300E08B65CC39	5.000	Host Sees

The following information is displayed in the **Active VLUNs** tab:

Column	Description
System Name	Name of the InServ Storage Server configured by the system administrator.
LUN	The exported Logical Unit Number (LUN) value.
Domain	The domain in which the VLUN resides.
Virtual Volume	The name of the exported virtual volume.
RAID Type	The VLUN RAID type.
Host	The name of the host to which the VLUN is exported.
Port	The InServ Storage Server port on which the VLUN is exported.
Host WWN/iSCSI Name	The logical disk's RAID type.
Exported Size	The VLUN's exported size.
Type	The VLUN type, **Host Sees**, **Host In Set**, or **Matched Set**.

VLUN Templates Tab

The **VLUN Templates** tab appears as follows:


Virtual Volume Details
Summary
Settings
Advanced
Logical Disks
SCSI Reservations
VLUNs
Layout
Alerts
Active VLUNs
VLUN Templates
Path Summary
Default
1 row
Filter
Clear
<Any column> contains:
Clear

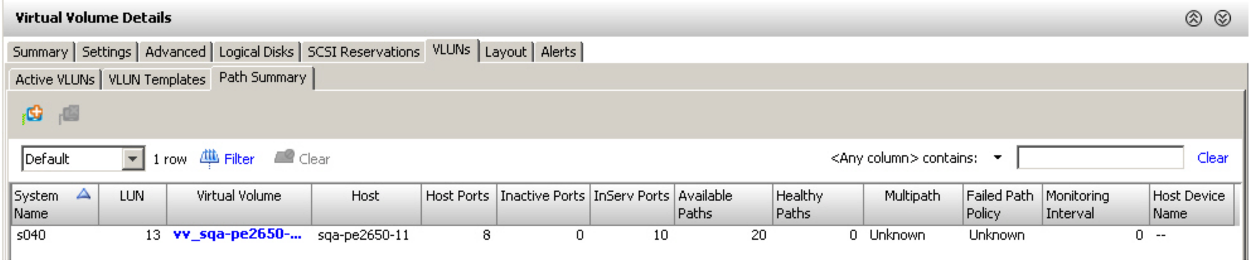
System Name	LUN	Domain	Virtual Volume	RAID Type	Host	Port	Type	Active VLUNs
s040	13	--	vv_sqa-pe2650-11.8	RAID 1	sqa-pe2650-11	--	Host Sees	20

The following information is displayed in the **VLUNs Templates** tab:

Column	Description
System Name	Name of the InServ Storage Server configured by the system administrator.
LUN	The exported Logical Unit Number (LUN) value.
Domain	The domain in which the VLUN resides.
Virtual Volume	The name of the exported virtual volume.
RAID Type	The VLUN RAID type.
Host	The name of the host to which the VLUN is exported.
Port	The InServ Storage Server port on which the VLUN is exported.
Type	The VLUN type, **Host Sees**, **Host In Set**, or **Matched Set**.
Active LUNs	The number of active LUNs.

Path Summary Tab

The **Path Summary** tab appears as follows:


Virtual Volume Details
Summary
Settings
Advanced
Logical Disks
SCSI Reservations
VLUNs
Layout
Alerts
Active VLUNs
VLUN Templates
Path Summary
Default
1 row
Filter
Clear
<Any column> contains:
Clear

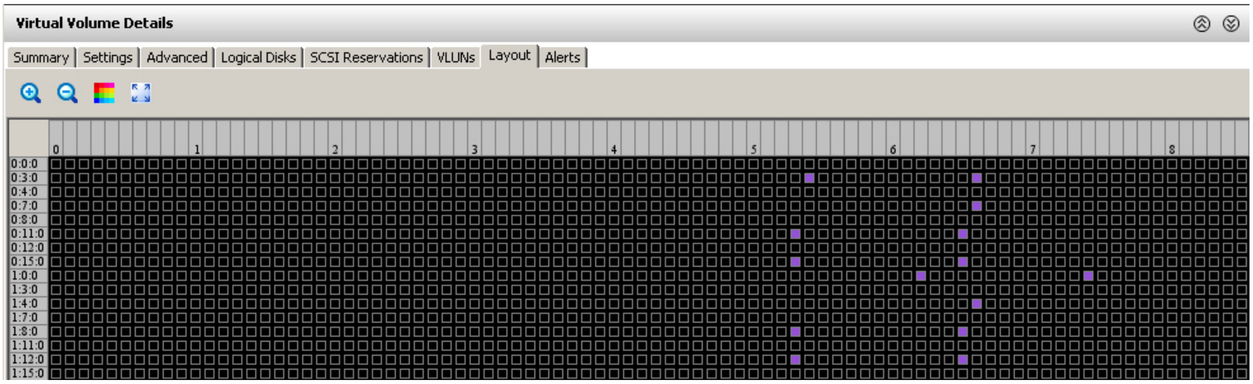
System Name	LUN	Virtual Volume	Host	Host Ports	Inactive Ports	InServ Ports	Available Paths	Healthy Paths	Multipath	Failed Path Policy	Monitoring Interval	Host Device Name
s040	13	vv_sqa-pe2650-...	sqa-pe2650-11	8	0	10	20	0	Unknown	Unknown	0	--

The following information is displayed in the **Path Summary** tab:

Column	Description
System Name	Name of the InServ Storage Server configured by the system administrator.
LUN	The exported Logical Unit Number (LUN) value.
Virtual Volume	The name of the exported virtual volume.
Host	The name of the host to which the VLUN is exported.
Host Ports	The number of host WWNs visible to the InServ Storage Server.
Inactive Ports	WWNs reported by the host, but not visible to the InServ Storage Server.
InServ Ports	The number of InServ Storage Server ports that can see the host.
Available Paths	The total number of distinct, available paths between the host and the InServ Storage Server.
Healthy Paths	The number of paths seen by the InServ Storage Server reported good by the host.
Multipath	The used multi-pathing method.
Failed Path Policy	The failed path monitoring method.
Monitoring Interval	The monitoring interval in seconds after which the host checks for failed paths.
Host Device Name	The device name for the selected VLUN on the host.

Layout Tab

The **Layout** tab shows how chunklets are used by the selected logical disk. The lower pane's **Layout** tab appears as follows:


Virtual Volume Details
Summary
Settings
Advanced
Logical Disks
SCSI Reservations
VLUNs
Layout
Alerts
0
1
2
3
4
5
6
7
8
0:0:0
0:3:0
0:4:0
0:7:0
0:8:0
0:11:0
0:12:0
0:15:0
1:0:0
1:3:0
1:4:0
1:7:0
1:8:0
1:11:0
1:12:0
1:15:0

See Viewing the Logical Disks Layout Screen for additional information.

Alerts Tab

The **Alerts** tab displays a table containing alert information for a single volume selected from the upper pane. The information displayed is identical to the information displayed in system alerts table. See Viewing System Alerts for additional information.

See also:

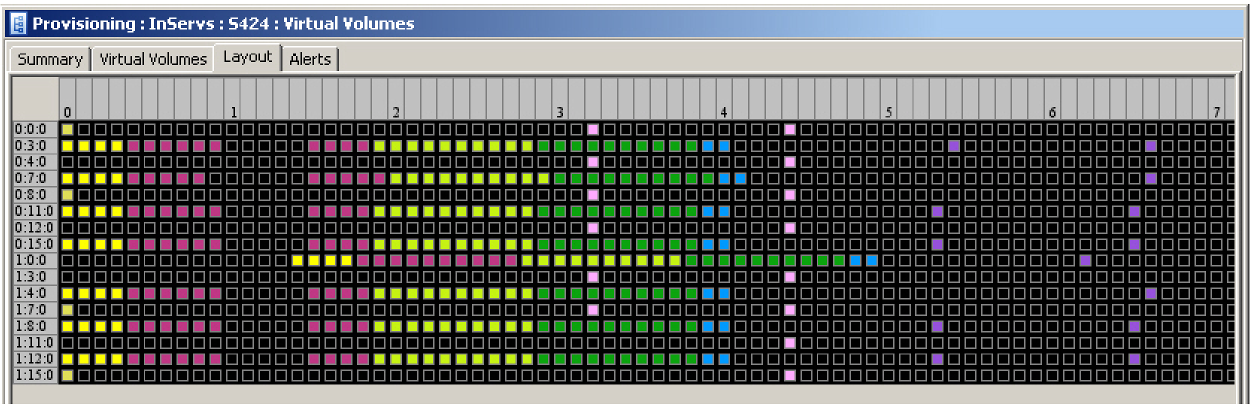
- Manager Pane
- Management Tree
- Viewing Virtual Volumes
- System and Component Status Icons
- Viewing System Alerts

Viewing the Virtual Volumes Layout Tab

To view the virtual volume **Layout** tab:

1. Access the virtual volume screen.
2. In the Management Window, click the **Layout** tab.

The virtual volumes **Layout** screen allows you to see the distribution of virtual volumes across physical disks and which chunklets are used by each virtual volume.


Provisioning : InServs : S424 : Virtual Volumes
Summary
Virtual Volumes
Layout
Alerts
0
1
2
3
4
5
6
7
0:0:0
0:3:0
0:4:0
0:7:0
0:8:0
0:11:0
0:12:0
0:15:0
1:0:0
1:3:0
1:4:0
1:7:0
1:8:0
1:11:0
1:12:0
1:15:0

See also:

- Manager Pane
- Management Tree
- Viewing Virtual Volumes

Viewing the Virtual Volumes Alerts Tab

To view the virtual volume **Alerts** tab:

1. Access the virtual volume screen.
2. In the Management Window, click the **Alerts** tab.

The **Alerts** tab displays virtual volume-related alerts for the system. The information displayed in the provisioning **Alerts** tab is identical to the information contained in the systems **Alerts** tab.

- The **Alerts** tab displays only virtual volume-related alerts.
- See Viewing System Alerts.

See also:

- Manager Pane
- Management Tree
- Viewing Virtual Volumes
- Viewing System Alerts

Creating Virtual Volumes

To create a virtual volume access the **Create Virtual Volume** wizard:

1. In the Manager Pane, click **Provisioning**.
2. In the Common Actions panel, click **Create Virtual Volume**.

   The **Create Virtual Volume** wizard appears.

Step 1. General

1. In the **General** group box:
    a. **System** - Select the system where the volume will be created.
    b. **Domain** - Select the domain in which the volume will reside. Select **<none>** if not applicable.
    c. **Name** - Enter a name for the new volume.
    d. **Template** - Select the volume template to apply to the new volume. If not required, select **<none>**.
    e. **Comments** - Enter any notes about the volume.
2. In the **User Space** group box:

    a. **Size** - Enter the size of the volume. Change the **Size** list value to **MiB** or **TiB** as applicable. The default is **GiB**.

    Note: Minimum permitted volume size is 256MiB, maximum is 16TiB.

    b. **Provisioning** - Select how the volume will be provisioned. Selecting **Fully Provisioned from CPGs** results in the creation of a base volume. Selecting **Thinly Provisioned** results in the creation of a Thinly Provisioned Virtual Volume (TPVV).
    c. If you selected **Fully Provisioned from CPGs**, select a CPG from the **CPG** list.
    d. If you selected **Thinly Provisioned**:

        i. **CPG** - Select a CPG.
        ii. In the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.

3. In the **Grouping** group box:
    a. **Count** - Enter the number of volumes to create.
    b. **Set Name** - Select a virtual volume set name or if not required, select **<none>**.

4. If you wish to configure the virtual volume's policies and geometry, select **Show advanced options panel(s)**.
5. Click **Next** to configure **Copy Space Settings**, or click **Finish**.

Step 2. Copy Space Settings

1. From the **CPG** list, select the CPG to use for copy space, or select **<none>**.
2. In the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.
3. Click **Next** to configure **Policies and Geometry** (if enabled) or to view the summary information, or click **Finish**.

Step 3. Policies & Geometry

1. In the **Policies** group box enable any of the following:
    a. Allow stale snapshots.
    b. Restrict export to one host.
    c. (For TPVVs only) Zero-fill on partially written data pages.
    d. Retention Time. If enabled, enter a value in the corresponding text box and then select either **day(s)** or **hour(s)**.
    e. Expiration Time. If enabled, enter a value in the corresponding text box and the select either **day(s)** or **hour(s)**.
2. In the **Geometry** group box:
    a. Enter the number of sectors per track, or accept the default value.
    b. Enter the number of heads per cylinder, or accept the default value.
3. Click **Next** to view summary information, or click **Finish**.

Step 4. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

Manager Pane

Management Tree

Common Actions Panel

Creating Virtual Volumes (Fully Provisioned from Physical Disks)

To create virtual volumes directly from physical disks, access the **Create Virtual Volume** wizard:

1. In the Manager Pane, click **Provisioning**.
2. In the Common Actions panel, click **Create Virtual Volume**.

The **Create Virtual Volume** wizard appears.

Step 1. General

1. In the **General** group box:
   a. **System** - Select the system where the volume will be created.
   b. **Domain** - Select the domain in which the volume will reside. Select **<none>** if not applicable.
   c. **Name** - Enter a name for the new volume.
   d. **Template** - Select the volume template to apply to the new volume. If not required, select **<none>**.
   e. **Comments** - Enter any notes about the volume.
2. In the **User Space** group box:

   a. **Size** - Enter the size of the volume. Change the **Size** list value to **MiB** or **TiB** as applicable. The default is **GiB**.

> **Note:** Minimum permitted volume size is 256MiB, maximum is 16TiB.

   b. **Provisioning** - Select **Fully Provisioned from PDs**.
   c. **Device Type** - Select **FC** for Fibre Channel drives, **NL** for Nearline drives, or **SSD** for Solid State drives.
   d. **Device Speed** - Select the appropriate speed or **<default>**.

> **Note:** The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.

   e. **RAID Type** - Select the appropriate RAID type for the volume.
   f. **Set Size** - Select the appropriate set size.

3. In the **Grouping** group box:
   a. **Count** - Enter the number of volumes to create.
   b. **Set Name** - Select a virtual volume set name or if not required, select **<none>**.

4. If you wish to configure the virtual volume's allocation settings, disk information, and policies and geometry, select **Show advanced options panel(s)**.
5. Click **Next** to configure **Copy Space Settings**, or click **Finish**.

Step 2. Copy Space Settings

1. From the **CPG** list, select the CPG to use for copy space, or select **<none>**.
2. In the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.
3. Click **Next** to configure **Allocation Settings** (if enabled) or to view the summary information, or click **Finish**.

Step 3. Allocation Settings

1. From the **Availability** list, select **Cage**, **Port**, or **Magazine**.
2. From the **Step Size** list, select default, 32, 64, 128, 256, or 512 KiB. The default value depends on raid type and device type used. If FC or NL drives are used, the step size defaults to 256 KiB for RAID 0 and RAID 1, and 128 KiB for RAID 5. If SSD drives are used, the step size defaults to 32 KiB for RAID 0 and RAID 1, and 64 KiB for RAID 5. For RAID 6, the default is a function of the set size.
3. Select the **Preferred Chunklets** as **Fast** or **Slow**.
4. Click **Next** to enter disk information, or click **Finish**.

Step 4. Disk Filter

The Disk Filter displays the physical disks used to create the volume. Pattern displays the parameters of the disks used.

To modify the list of disks used:

1. Click the **Filter** icon.
2. See Filtering for filtering details.
3. Click **Next** to configure **Policies and Geometry**, or click **Finish**.

Step 5. Policies & Geometry

1. In the **Policies** group box enable any of the following:
   a. Allow stale snapshots.
   b. Restrict export to one host.

   c. (For TPVVs only) Zero-fill on partially written data pages.
   d. Retention Time. If enabled, enter a value in the corresponding text box and then select either **day(s)** or **hour(s)**.
   e. Expiration Time. If enabled, enter a value in the corresponding text box and the select either **day(s)** or **hour(s)**.
2. In the **Geometry** group box:
   a. Enter the number of sectors per track, or accept the default value.
   b. Enter the number of heads per cylinder, or accept the default value.
3. Click **Next** to view summary information, or click **Finish**.

Step 6. Summary

➜Review the summary information and when satisfied, click **Finish**.

See also:

Manager Pane

Management Tree

Common Actions Panel

Editing Virtual Volumes

To edit a virtual volume, access the **Edit Virtual Volume** wizard.

1. Access the **Virtual Volumes** tab.
2. Right-click the volume you wish to edit.
3. In the menu that appears, click **Edit**.

   The **Edit Virtual Volume** wizard appears.

Step 1. General

1. In the **General** group box:
   a. **Name** - Enter a new name for the volume.
   b. **Comments** - Enter any notes about the volume.
2. In the **User Space** group box:

   a. **Size** - Enter the size of the volume. Change the **Size** list value to **MiB** or **TiB** as applicable. The default is **GiB**.

> **Note:** Minimum permitted volume size is 256MiB, maximum is 16TiB.

   b. If the volume is **Fully Provisioned from CPGs**, select a CPG from the **CPG** list.
   c. If the volume is **Thinly Provisioned**, in the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.

3. If you wish to edit the virtual volume's policies and geometry, select **Show advanced options panel(s)**.

4. Click **Next** to configure **Copy Space Settings**, or click **Finish**.

Step 2. Copy Space Settings

1. From the **CPG** list, select the CPG to use for copy space, or select **<none>**.
2. In the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.
3. Click **Next** to configure **Policies and Geometry** (if enabled) or to view the summary information, or click **Finish**.

Step 3. Policies & Geometry

1. In the **Policies** group box enable any of the following:
   a. Allow stale snapshots.
   b. Restrict export to one host.
   c. Zero-fill on partially written data pages.
   d. Retention Time. If enabled, enter a value in the corresponding text box and then select either **day(s)** or **hour(s)**.
   e. Expiration Time. If enabled, enter a value in the corresponding text box and the select either **day(s)** or **hour(s)**.
2. In the **Geometry** group box:
   a. Enter the number of sectors per track, or accept the default value.
   b. Enter the number of heads per cylinder, or accept the default value.
3. Click **Next** to view summary information, or click **Finish**.

Step 4. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

Viewing the Virtual Volumes Tab

Editing Virtual Volumes (Fully Provisioned from Physical Disks)

To edit a virtual volume, access the **Edit Virtual Volume** wizard.

1. Access the **Virtual Volumes** tab.
2. Right-click the volume you wish to edit.
3. In the menu that appears, click **Edit**.

The **Edit Virtual Volume** wizard appears.

Step 1. General

1. In the **General** group box:
   a. **Name** - Enter a new name for the volume.
   b. **Comments** - Enter any notes about the volume.
2. In the **User Space** group box:

   a. **Size** - Enter the size of the volume. Change the **Size** list value to **MiB** or **TiB** as applicable. The default is **GiB**.

Note: Minimum permitted volume size is 256MiB, maximum is 16TiB.

   b. If the volume is **Fully Provisioned from PDs**:
      i. **Device Type** - Select **FC** for Fibre Channel drives, **NL** for Nearline drives, or **SSD** for Solid State drives.
      ii. **Device Speed** - Select the appropriate speed or **<default>**.

Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.

      iii. **RAID Type** - Select the appropriate RAID type for the volume.
      iv. **Set Size** - Select the appropriate set size.

3. If you wish to edit the virtual volume's allocation settings, disk information, and policies and geometry, select **Show advanced options panel(s)**.

4. Click **Next** to configure **Copy Space Settings**, or click **Finish**.

Step 2. Copy Space Settings

1. From the **CPG** list, select the CPG to use for copy space, or select **<none>**.
2. In the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.
3. Click **Next** to configure **Allocation Settings** (if enabled) or to view the summary information, or click **Finish**.

Step 3. Policies & Geometry

1. In the **Policies** group box enable any of the following:
    1. Allow stale snapshots.
    2. Restrict export to one host.
    3. (For TPVVs only) Zero-fill on partially written data pages.
    4. Retention Time. If enabled, enter a value in the corresponding text box and then select either **day(s)** or **hour(s)**.
    5. Expiration Time. If enabled, enter a value in the corresponding text box and the select either **day(s)** or **hour(s)**.
2. In the **Geometry** group box:
    1. Enter the number of sectors per track, or accept the default value.
    2. Enter the number of heads per cylinder, or accept the default value.
3. Click **Next** to view summary information, or click **Finish**.

Step 4. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

Viewing the Virtual Volumes Tab

Creating Similar Virtual Volumes

You can create new virtual volumes based on existing virtual volumes. To do this:

1. Access the **Virtual Volumes** tab.
2. Right-click the volume you wish to use as the basis for your new volume.
3. In the menu that appears, click **Create Similar**.

   The **Create VV** wizard appears.

4. Follow the instructions in Creating Virtual Volumes.

See also:

Viewing the Virtual Volumes Tab

Creating Virtual Volumes

Saving a Virtual Volume as a Template

You can save a virtual volume as a template. To do this:

1. Access the **Virtual Volumes** tab.
2. Right-click the volume you wish save as a template.
3. In the menu that appears, click **Save As Template**.

   The **Create VV Template** wizard appears.

4. Follow the instructions in Creating Virtual Volume Templates.

See also:

Viewing the Virtual Volumes Tab

Creating Virtual Volume Templates

Exporting Virtual Volumes

To export a virtual volume, access the **Export Virtual Volume** wizard:

1. Click **Hosts** or **Provisioning** in the Manager Pane.
2. If you are working in the **Hosts** manager, in the Common Actions panel, click **Export Volume**.
3. If you are working in the **Provisioning** manager:
    a. Access the **Virtual Volumes** tab.
    b. Right-click the volume you wish to exort.
    c. In the menu that appears, click **Export**.

The **Export Virtual Volume** wizard appears.

Step 1. General

1. Perform the **General** group box:
    a. **System** - Select a system from the list.
    b. **Domain** - Select a domain from the list. If not applicable, select <none>.
    c. Select either **Virtual Volume** or **Virtual Volume Set**.
    d. From the virtual volume or virtual volume set list, select the volume(s) to export.
2. Click **Next**.

Step 2. Settings

1. In the **Settings** group box:
    a. Select either **Host** or **Host Set**.
    b. From the host or host set list, select the host(s) or host set(s) on which the volume will be exported.
    c. **Port** - Select a port from the list.
    d. **LUN** - Select the **Auto** checKiBox for the system to select the LUN, or enter a number.
    e. (Optional) To allow overriding of lower priority templates, click the **Override lower priority templates** checKiBox.
    f. (Optional) To prevent the storage server from issuing a Loop Initialization Primitive (LIP), or Registered State Change notification (RSCN), click **After export, do not issue VLUN change notification (no LIP or RSCN)**.
2. Click **Finish** if you wish to export the volume(s) as configured, or click **Next** to view the summary.

Step 3. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

- Manager Pane
- Common Actions Panel
- Selecting Multiple Items
- Viewing Virtual Volumes
- Creating VLUNs

Creating a Remote Copy Group from Virtual Volumes

Note: 3PAR Remote Copy requires a 3PAR Remote Copy license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

To create a Remote Copy group from virtual volumes:

1. Access the **Virtual Volumes** tab.
2. Select the volumes from which you wish to create a Remote Copy group.
3. Right-click your selection.
4. In the menu that appears, click **Create Remote Copy Group**.

   The **Create Remote Group** wizard appears.

5. Follow the directions in Creating Remote Copy Groups under Working with the Remote Copy Manager.

See also:

- Viewing the Virtual Volumes Tab
- Selecting Multiple Items
- Creating Remote Copy Groups

Adding a Virtual Volume to a Remote Copy Group

Note: 3PAR Remote Copy requires a 3PAR Remote Copy license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

To add a virtual volume to a Remote Copy group:

1. Access the **Virtual Volumes** tab.
2. Select the volume(s) you wish to add to a Remote Copy group.
3. Right-click the selection.
4. In the menu that appears, click **Add to Remote Copy Group**.

The **Add Volumes to Remote Group** wizard appears.

4. Select the Remote Copy group(s) from the **Group** list.
5. (Optional) Select **Start group after adding volumes** if you wish to immediately start the Remote Copy group after adding the selected volume.
6. (Optional) Select **Do not perform initial sync** if you do not want the Remote Copy group to synchronize with its backup group after adding the volume.
7. In the **Source Volume on** list, select the volume you are adding to the group.
8. In the **Backup Volume on** list, select an existing backup volume, or click **New** to create a new backup volume.

Note: When selecting volumes, you can filter the lists to include by clicking the down arrow and selecting **Virtual Volumes**, **Provisioning**, and **Virtual Size**. To clear the filter, click **Clear**.

9. If you clicked **New**:
   a. Enter a volume name.
   b. Select CPG for the user space.
   c. Select a CPG for the copy space.
   d. (Optional) If you wish to enter an allocation warning percentage and/or allocation limit, click **Enabled** and enter a value.

Note: If you are creating a Remote Copy group for a Synchronous Long Distance Remote Copy configuration, repeat steps 8 and/or 9 for the second **Backup Volume on** list of virtual volumes.

10. Click **Add**.

11. Click **OK**.

See also:

Viewing the Virtual Volumes Tab

Selecting Multiple Items

Creating Remote Copy Groups

Moving a Virtual Volume to Another Domain

Note: 3PAR Domains requires a 3PAR Domain license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

If you are using 3PAR Domains and wish to move a volume from one domain to another, follow the instructions in Moving Objects from One Domain to Another Domain.

Removing Virtual Volumes

To remove a virtual volume:

1. Access the **Virtual Volumes** tab.
2. Right-click the volume you wish to remove.
3. In the menu that appears, click **Remove**.

   The **Remove Virtual Volume** dialog box appears.

4. (Optional) Select to remove volumes and descendents without active VLUNs, associated with inactive VLUNs, and from volume sets.
5. Click **OK**.

See also:

Viewing the Virtual Volumes Tab

Tuning Virtual Volumes

To tune a virtual volume, access the Tune Virtual Volume wizard:

1. Access the **Virtual Volumes** tab.
2. Right-click the volume you wish to tune.
3. In the menu that appears, click **Tune**.

The **Tune Virtual Volume** wizard appears.

Step 1. General

1. In the **General** group box:
   a. **System** - Select the system containing the volume to be tuned.
   b. **Domain** - Select the domain containing the volume to be tuned. If not applicable, click **<none>**.
   c. **Allocation Space** - Select **User Space (Fully Provisioned from CPG)**, **User Space (Fully Provisioned from PDs)**, or **Copy Space**.
   d. **Virtual Volume(s)** - Select the virtual volume(s) to be tuned.
   e. If you selected **User Space (Fully Provisioned from CPG)**, select a template from the **Template** list.
2. In the **Settings** group box:
3. If you selected **User Space (Fully Provisioned from PDs)**:
   a. **Device Type** - Select **FC** for Fibre Channel drives, **NL** for Nearline drives, or **SSD** for Solid State drives.
   b. **Device Speed** - Select the appropriate speed or **<default>**.
4. If you selected **User Space (Fully Provisioned from CPGs)** or **Copy Space**, from the **Target** list, select a target CPG.
5. If the volume is provisioned from physical disks, you can optionally display additional tuning options by selecting **Show advanced options panel(s)**.
6. Click **Next** to enter allocation settings or view summary information, or click **Finish**.

Step 2. Allocation Settings

1. From the **Availability** list, select **Cage**, **Port**, or **Magazine**.
2. From the **Step Size** list, select default, 32, 64, 128, 256, or 512 KiB. The default value depends on raid type and device type used. If FC or NL drives are used, the step size defaults to 256 KiB for RAID 0 and RAID 1, and 128 KiB for RAID 5. If SSD drives are used, the step size defaults to 32 KiB for RAID 0 and RAID 1, and 64 KiB for RAID 5. For RAID 6, the default is a function of the set size. S
3. elect the **Preferred Chunklets** as **Fast** or **Slow**.
4. Click **Next** to enter disk information, or click **Finish**.

Step 3. Disk Filter

The Disk Filter displays the physical disks used to create the volume. Pattern displays the parameters of the disks used.

To modify the list of disks used:

1. Click the **Filter** icon.
2. See Filtering for filtering details.
3. Click **Next** to view summary information, or click **Finish**.

Step 4. Summary

➜Review the summary information and when satisfied, click **Finish**.

See also:

Viewing the Virtual Volumes Tab

Restarting Tuning a Virtual Volume

To restart a previously interrupted tune task on a virtual volume:

1. Access the **Virtual Volumes** tab.
2. Right-click the volume for which you wish to restart the tuning task.
3. In the menu that appears, click **Restart Tune**.
4. Click **Yes**.

See also:

Viewing the Virtual Volumes Tab

Rolling Back a Tuned Virtual Volume

To roll back a previously tuned virtual volume to its previous state:

1. Access the **Virtual Volumes** tab.
2. Right-click the volume you wish to roll back.
3. In the menu that appears, click **Rollback Tune**.
4. Click **Yes**.

See also:

[Viewing the Virtual Volumes Tab]

Working with Virtual Volume Sets

When working with virtual volume sets, you can:

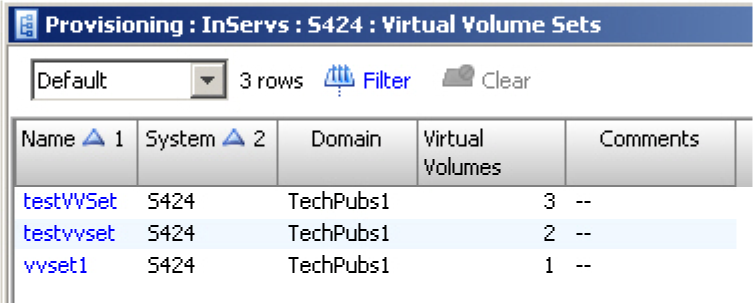
- [View Virtual Volume Sets]
- [Create Virtual Volume Sets]
- [Edit a Virtual Volume Set]
- [Export Virtual Volume Sets]
- [Remove a Virtual Volume Set]
- [Adding a Virtual Volume to a Virtual Volume Set]

Viewing Virtual Volume Sets

To view a system's virtual volume sets:

1. In the Manager Pane, click **Provisioning**.
2. In the Management Tree, click **Virtual Volume Sets** under the system node you wish to view.

The **Virtual Volume Sets** screen appears as follows:



Name △ 1	System △ 2	Domain	Virtual Volumes	Comments
testVVSet	S424	TechPubs1	3	--
testvvset	S424	TechPubs1	2	--
vvset1	S424	TechPubs1	1	--

The following information is displayed:

Column	Description
Name	The name of the virtual volume set. Each name is a link to that virtual volume set's detail information. See [Viewing_a_Single_Virtual_Volume_Set].
System	The system on which the virtual volume set resides.

Domain	The domain in which the virtual volume set resides.
Virtual Volumes	The number of virtual volumes belonging to the virtual volume set.
Comments	Any comments.

Viewing a Single Virtual Volume Set

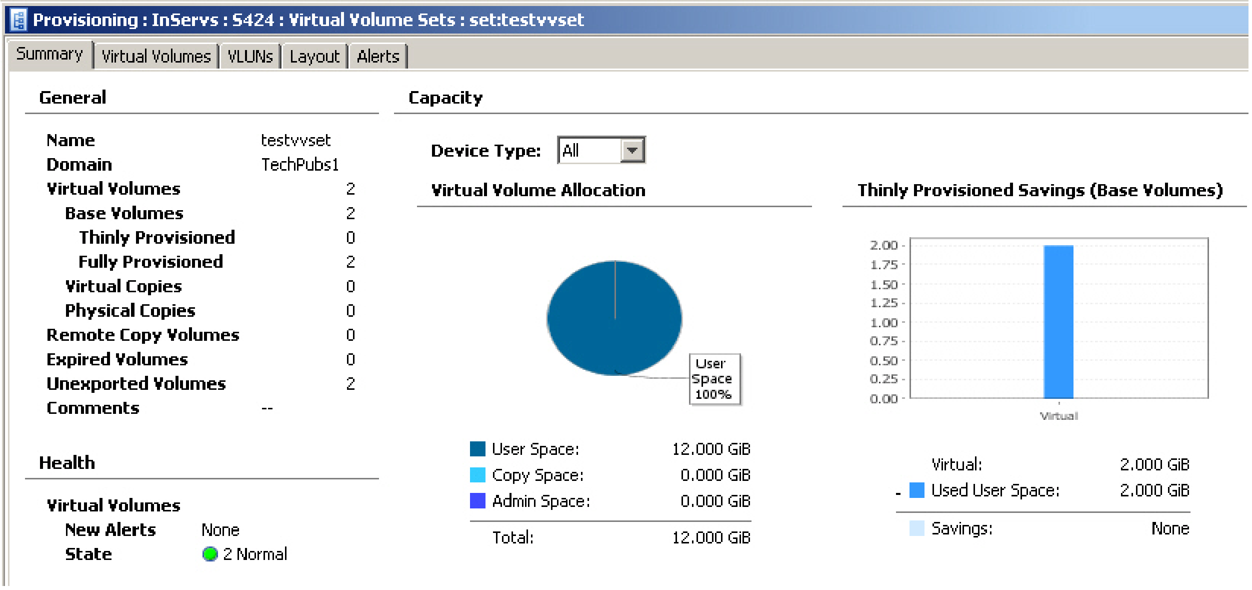
To view a single virtual volume set:

1. In the Manager Pane, click **Provisioning**.
2. In the Management Tree, click **Virtual Volume Sets** under the system node you wish to view.
3. Click the virtual volume set you wish to view under the **Name** column.

or

1. In the Manager Pane, click **Provisioning**.
2. In the Management Tree, click the virtual volume set under **Virtual Volume Sets** you wish to view.

The single **Virtual Volume Set** screen appears as follows:


Provisioning : InServs : S424 : Virtual Volume Sets : set:testvvset
Summary
Virtual Volumes
VLUNs
Layout
Alerts
User Space 100%
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
Virtual

General

Name	testvvset	
Domain	TechPubs1	
Virtual Volumes		2
Base Volumes		2
Thinly Provisioned		0
Fully Provisioned		2
Virtual Copies		0
Physical Copies		0
Remote Copy Volumes		0
Expired Volumes		0
Unexported Volumes		2
Comments	--	

Health

Virtual Volumes

New Alerts	None
State	● 2 Normal

Capacity

Device Type: All

Virtual Volume Allocation

■ User Space:	12.000 GiB
■ Copy Space:	0.000 GiB
■ Admin Space:	0.000 GiB
Total:	12.000 GiB

Thinly Provisioned Savings (Base Volumes)

Virtual:	2.000 GiB
■ Used User Space:	2.000 GiB
■ Savings:	None

The type of information displayed is identical to the information displayed for virtual volumes. See the Viewing Virtual Volumes topic and its sub-topics for additional information.

See also:

- Manager Pane
- Management Tree
- Viewing Virtual Volumes
- Viewing the Virtual Volumes Summary Tab
- Viewing the Virtual Volumes Tab
- Viewing the Virtual Volumes Layout Tab
- Viewing the Virtual Volumes Alerts Tab

Creating Virtual Volume Sets

To create a virtual volume set:

1. In the Manager Pane, click **Provisioning**.
2. In the Management Tree, click right-click **Virtual Volume Sets** under the system on which you wish to create the volume set.
3. In the menu that appears, click **Create Virtual Volume Set**.

The **Create Virtual Volume Set** wizard appears.

Step 1. General

1. **System** - Select the system to create the virtual volume set.
2. **Domain** - select the domain in which to create the new virtual volume set, or if not required, select **<none>**.
3. **Name** - Enter a name for the new set.
4. **Comments** - Enter any notes about the virtual volume set.
5. Click **Next** to assign virtual volumes to the set.

Step 2. Volumes

1. To assign available volumes:
   a. Select one or more volumes from the **Available** volumes list.
   b. Click the down arrow to add the selected volume(s) to the **Assigned** volumes list.
2. Click **Next**.

Step 3. Summary

➜Review the summary information and when satisfied, click **Finish**.

See also:

- Manager Pane
- Management Tree
- Viewing Virtual Volume Sets
- Selecting Multiple Items

Editing a Virtual Volume Set

To edit a virtual volume set:

1. Access the **Virtual Volume Sets** screen.
2. Right-click the virtual volume set you wish to edit.
3. In the menu that appears, click **Edit**.

The **Edit Virtual Volume Set** wizard appears.

Step 1. General

1. **Name** - Enter a name for the set.
2. **Comments** - Enter any notes about the virtual volume set.
3. Click **Next** to assign/unassign virtual volumes to/from the set.

Step 2. Volumes

1. To assign available volumes:
    a. Select one or more volumes from the **Available** volumes list.
    b. Click the down arrow to add the selected volume(s) to the **Assigned** volumes list.
2. To unassign volumes:
    a. Select one or more volumes form the **Assigned** volumes list.
    b. Click the up arrow to add the selected volume(s) to the **Available** volume list.
3. Click **Next**.

Step 3. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

- Manager Pane

Management Tree

Viewing Virtual Volume Sets

Selecting Multiple Items

Adding a Virtual Volume to a Virtual Volume Set

To add a virtual volume to an existing virtual volume set:

1. Access the **Virtual Volumes** tab.
2. Right-click the volume you wish to add to a virtual volume set.
3. In the menu that appears, click **Add to Virtual Volume Set**.

   The **Add to Virtual Volume Set** dialog box appears.

4. Select a virtual volume set from the list.
5. Click **OK**.

See also:

Viewing the Virtual Volumes Tab

Exporting Virtual Volume Sets

To export a virtual volume set:

1. Access the **Virtual Volume Sets** screen.
2. Right-click the virtual volume set you wish to export.

   The **Export Virtual Volume** wizard appears.

3. Follow the instructions in Exporting Virtual Volumes.

See also:

Viewing Virtual Volume Sets

Exporting Virtual Volumes

Removing a Virtual Volume Set

To remove a virtual volume set:

1. Access the **Virtual Volume Sets** screen.
2. Right-click the virtual volume set you wish to remove.

Note: If you wish to remove multiple virtual volume sets (see Selecting Multiple Items), select the volume sets you wish to remove before right-clicking.

3. In the menu that appears, click **Remove**.

   The **Remove Virtual Volume Sets** dialog box appears.

4. Click **OK**.

See also:

Viewing Virtual Volume Sets

Selecting Multiple Items

Working with VLUNs

When working with VLUNs, you can:

View VLUNs

Create VLUNs

Remove VLUNs

Viewing VLUNs

To view system VLUNs:

1. In the Manager Pane, click **Provisioning**.
2. In the Management Tree, click **VLUNs** under the system node you wish to view.

The VLUNs screen provides VLUN information on three tabs, **Active VLUNs**, **VLUN Templates**, and **Path Summary**.

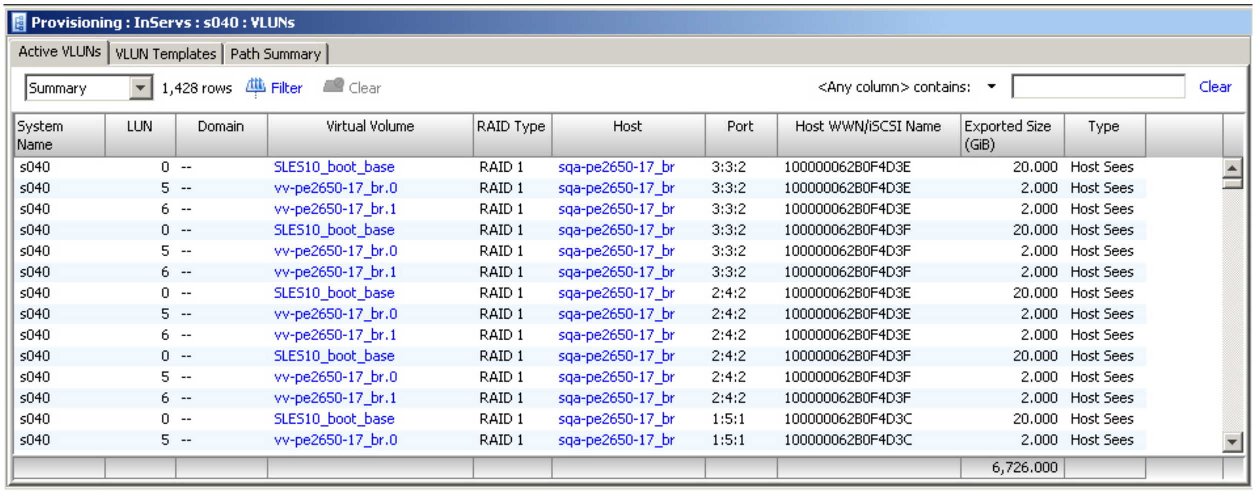
> **Note:** In addition to providing comprehensive information about a system's VLUNs, the InForm Management Console also allows you to the same type of information for Remote Copy VLUNs by selecting the **Remote Copy** child node under the **VLUNs** node in the Management Tree.

Active VLUNs Tab

The **Active VLUNs** tab can be filtered to display **Summary** information and **Remote Copy** information.

Displaying Summary Information

The **Active VLUNs** tab for summary information appears as follows:



System Name	LUN	Domain	Virtual Volume	RAID Type	Host	Port	Host WWN/iSCSI Name	Exported Size (GiB)	Type
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3E	20.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3E	2.000	Host Sees
s040	6	--	vv-pe2650-17_br.1	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3E	2.000	Host Sees
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3F	20.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3F	2.000	Host Sees
s040	6	--	vv-pe2650-17_br.1	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3F	2.000	Host Sees
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3E	20.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3E	2.000	Host Sees
s040	6	--	vv-pe2650-17_br.1	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3E	2.000	Host Sees
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3F	20.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3F	2.000	Host Sees
s040	6	--	vv-pe2650-17_br.1	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3F	2.000	Host Sees
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_br	1:5:1	100000062B0F4D3C	20.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	1:5:1	100000062B0F4D3C	2.000	Host Sees
								6,726.000	

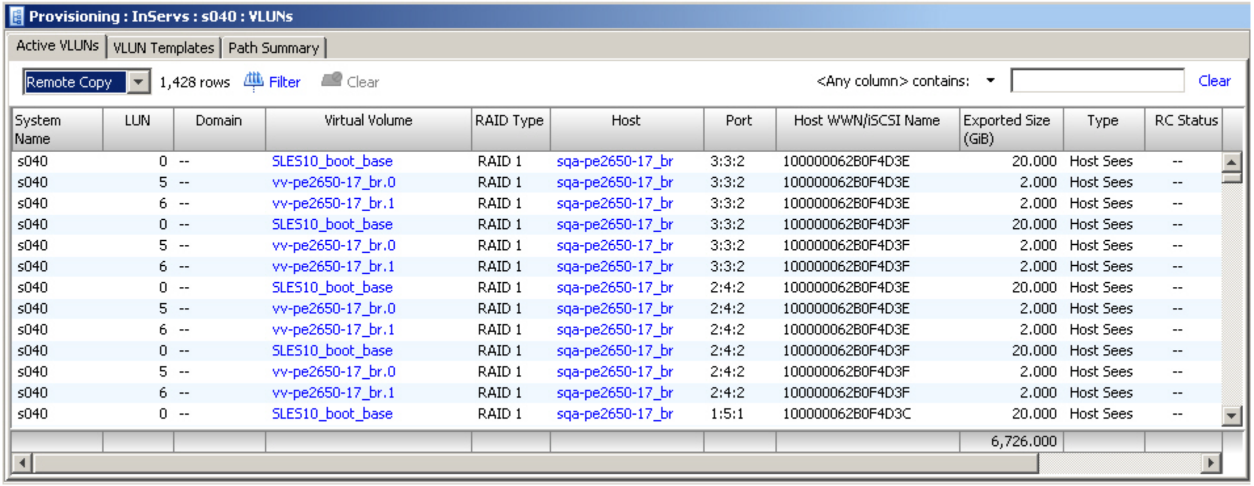
The following information is displayed on the **Active VLUNs** tab:

Column	Description
System Name	The name of the InServ Storage Server.
LUN	The exported Logical Unit Number (LUN) value.

Virtual Volume	The name of the virtual volume.
RAID Type	The VLUN RAID type.
Host	The name of the host to which the VLUN is exported.
Port	The InServ Storage Server port on which the VLUN is exported.
Host WWN/iSCSI Name	The WWN or iSCSI name of the host.
Exported Size	The VLUN's exported size in GiB.
Type	The VLUN type, **Host Sees**, **Host In Set**, or **Matched Set**.

Displaying Remote Copy Information

The **Active VLUNs** tab for Remote Copy information appears as follows:



System Name	LUN	Domain	Virtual Volume	RAID Type	Host	Port	Host WWN/iSCSI Name	Exported Size (GiB)	Type	RC Status
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3E	20.000	Host Sees	--
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3E	2.000	Host Sees	--
s040	6	--	vv-pe2650-17_br.1	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3E	2.000	Host Sees	--
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3F	20.000	Host Sees	--
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3F	2.000	Host Sees	--
s040	6	--	vv-pe2650-17_br.1	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3F	2.000	Host Sees	--
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3E	20.000	Host Sees	--
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3E	2.000	Host Sees	--
s040	6	--	vv-pe2650-17_br.1	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3E	2.000	Host Sees	--
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3F	20.000	Host Sees	--
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3F	2.000	Host Sees	--
s040	6	--	vv-pe2650-17_br.1	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3F	2.000	Host Sees	--
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_br	1:5:1	100000062B0F4D3C	20.000	Host Sees	--
								6,726.000		

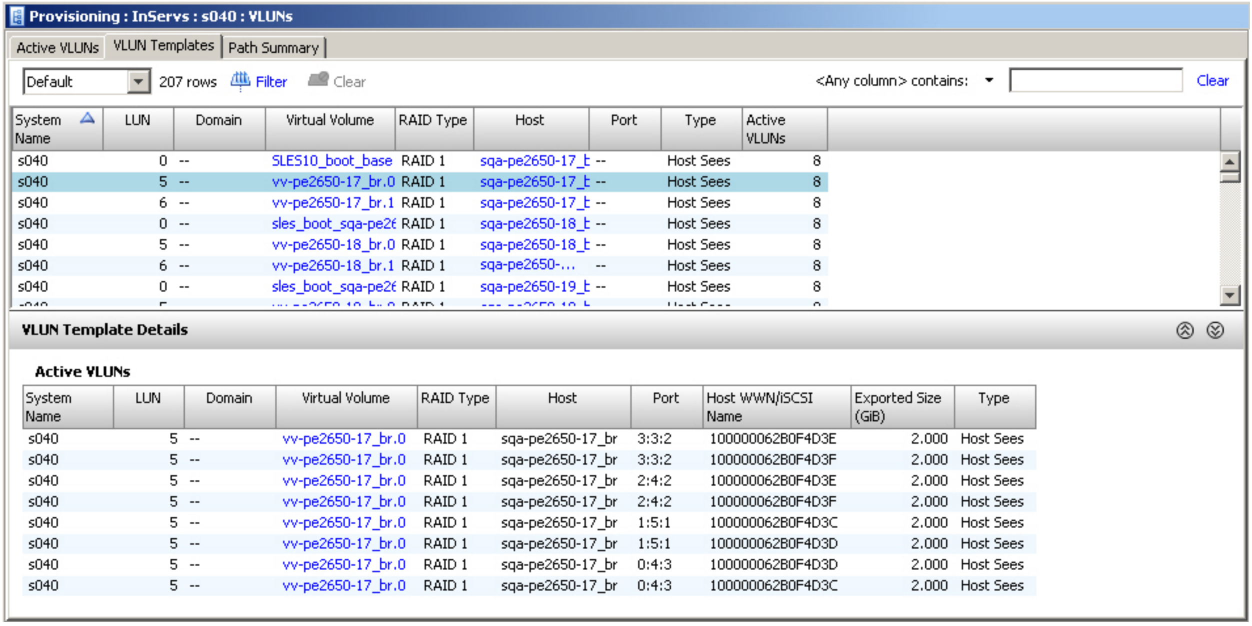
The following information is displayed on the **Active VLUNs** tab for Remote Copy information:

Column	Description
System Name	The name of the InServ Storage Server.
LUN	The exported Logical Unit Number (LUN) value.
Virtual Volume	The name of the virtual volume.

RAID Type	The VLUN RAID type.
Host	The name of the host to which the VLUN is exported.
Port	The InServ Storage Server port on which the VLUN is exported.
Host WWN/iSCSI Name	The WWN or iSCSI name of the host.
Exported Size	The VLUN's exported size in GiB.
Type	The VLUN type, **Host Sees**, **Host In Set**, or **Matched Set**.
RC Status	The Remote Copy Status
RC Group (not shown)	The exported Remote Copy group.
Writable LUNs (not shown)	The number of writable LUNs.

VLUN Templates Tab

The **VLUN Templates** tab appears as follows:



System Name	LUN	Domain	Virtual Volume	RAID Type	Host	Port	Type	Active VLUNs
s040	0	--	SLES10_boot_base	RAID 1	sqa-pe2650-17_	--	Host Sees	8
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_	--	Host Sees	8
s040	6	--	vv-pe2650-17_br.1	RAID 1	sqa-pe2650-17_	--	Host Sees	8
s040	0	--	sles_boot_sqa-pe2	RAID 1	sqa-pe2650-18_	--	Host Sees	8
s040	5	--	vv-pe2650-18_br.0	RAID 1	sqa-pe2650-18_	--	Host Sees	8
s040	6	--	vv-pe2650-18_br.1	RAID 1	sqa-pe2650-...	--	Host Sees	8
s040	0	--	sles_boot_sqa-pe2	RAID 1	sqa-pe2650-19_	--	Host Sees	8

Active VLUNs

System Name	LUN	Domain	Virtual Volume	RAID Type	Host	Port	Host WWN/iSCSI Name	Exported Size (GiB)	Type
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3E	2.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	3:3:2	100000062B0F4D3F	2.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3E	2.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	2:4:2	100000062B0F4D3F	2.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	1:5:1	100000062B0F4D3C	2.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	1:5:1	100000062B0F4D3D	2.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	0:4:3	100000062B0F4D3D	2.000	Host Sees
s040	5	--	vv-pe2650-17_br.0	RAID 1	sqa-pe2650-17_br	0:4:3	100000062B0F4D3C	2.000	Host Sees

The **VLUN Templates** tab is split into an upper tab and a lower tab. The upper tab displays summary information about system VLUN templates. The lower pane displays active VLUN information about a selected template from the upper pane.

Upper Pane

The following information is displayed in the upper pane:

Column	Description
System Name	The name of the InServ Storage Server.
LUN	The exported Logical Unit Number (LUN) value.
Domain	The domain in which the VLUN template resides.
Virtual Volume	The name of the virtual volume.
RAID Type	The VLUN RAID type.
Host	The name of the host to which the VLUN is exported.
Port	The InServ Storage Server port on which the VLUN is exported.
Host WWN/iSCSI Name	The WWN or iSCSI name of the host.
Exported Size	The VLUN's exported size in GiB.
Type	The VLUN type, **Host Sees**, **Host In Set**, or **Matched Set**.
Active VLUNs	The number of active VLUNs.

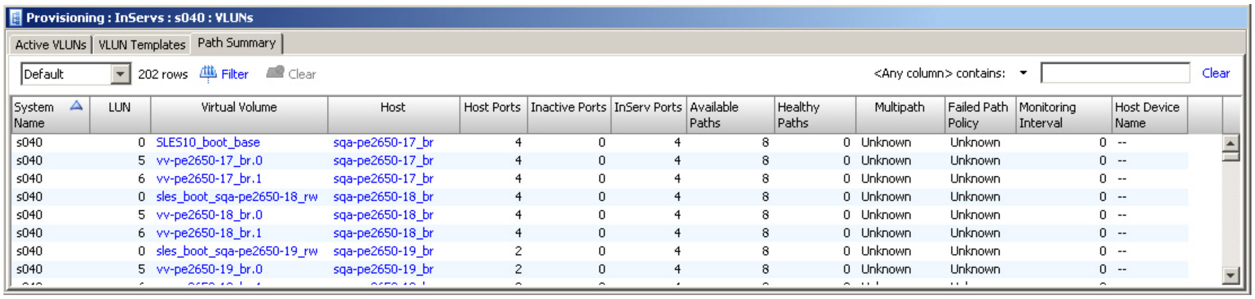
Lower Pane

The lower pane displays **Active VLUNs** for the selected template. See the Active_VLUNs_Tab for details.

Path Summary Tab

Note: Paths information is available for display for systems using InForm OS version 2.3.1 and later.

The **Path Summary** tab appears as follows:



System Name	LUN	Virtual Volume	Host	Host Ports	Inactive Ports	InServ Ports	Available Paths	Healthy Paths	Multipath	Failed Path Policy	Monitoring Interval	Host Device Name
s040	0	SLES10_boot_base	sqa-pe2650-17_br	4	0	4	8	0	Unknown	Unknown	0	--
s040	5	vv-pe2650-17_br.0	sqa-pe2650-17_br	4	0	4	8	0	Unknown	Unknown	0	--
s040	6	vv-pe2650-17_br.1	sqa-pe2650-17_br	4	0	4	8	0	Unknown	Unknown	0	--
s040	0	sles_boot_sqa-pe2650-18_rw	sqa-pe2650-18_br	4	0	4	8	0	Unknown	Unknown	0	--
s040	5	vv-pe2650-18_br.0	sqa-pe2650-18_br	4	0	4	8	0	Unknown	Unknown	0	--
s040	6	vv-pe2650-18_br.1	sqa-pe2650-18_br	4	0	4	8	0	Unknown	Unknown	0	--
s040	0	sles_boot_sqa-pe2650-19_rw	sqa-pe2650-19_br	2	0	4	8	0	Unknown	Unknown	0	--
s040	5	vv-pe2650-19_br.0	sqa-pe2650-19_br	2	0	4	8	0	Unknown	Unknown	0	--

The following information is displayed in the **Path Summary** tab:

Column	Description
System Name	Name of the InServ Storage Server configured by the system administrator.
LUN	The exported Logical Unit Number (LUN) value.
Virtual Volume	The name of the exported virtual volume. Each entry is a link to the Virtual Volumes tab.
Host	The name of the host to which the VLUN is exported. Each entry is a link to the Hosts tab.
Host Ports	The number of host WWNs visible to the InServ Storage Server.
Inactive Ports	WWNs reported by the host, but not visible to the InServ Storage Server.
InServ Ports	The number of InServ Storage Server ports that can see the host.
Available Paths	The total number of distinct, available paths between the host and the InServ Storage Server.
Healthy Paths	The number of paths seen by the InServ Storage Server reported good by the host.
Multipath	The used multi-pathing method.

Failed Path Policy	The failed path monitoring method.
Monitoring Interval	The monitoring interval in seconds after which the host checks for failed paths.
Host Device Name	The device name for the selected VLUN on the host.

See also:

Manager Pane

Management Tree

Creating VLUNs

To create a VLUN:

1. In the Manager Pane, click **Provisioning**.
2. In the Common Actions Panel, click **Create VLUN**.

   The **Export Virtual Volume wizard** appears.

4. Follow the instructions in Exporting Virtual Volumes.

See also:

Manager Pane

Common Actions Panel

Exporting Virtual Volumes

Removing VLUNs

To remove a VLUN:

1. Access the **VLUNs** screen.
2. Right-click the VLUN you wish to remove.

> **Note:** If you wish to remove multiple VLUNs (see Selecting Multiple Items), select the VLUNs you wish to remove before right-clicking.

3. In the menu that appears, click **Remove**.

   The **Remove VLUN(s)** dialog box appears.

4. (Optional) In the **Removal VLUN(s)** dialog box that appears, click the **After removal...** checKiBox to prevent the storage server from issuing a Loop Initialization Primitive (LIP) or Registered State Change notification (RSCN) after removing the VLUN.
5. Click **OK**.

See also:

Viewing VLUNs

Selecting Multiple Items

Working with Templates

The InForm Management Console allows you to create templates that enable you to apply a set of parameters again and again to create virtual volumes or Common Provisioning Groups (CPGs) with the same, or similar characteristics.

The following general rules apply to templates:

- A property can either be *included* in a template or not included (unincluded). Properties are Virtual Volume (VV) or Common Provisioning Group (CPG) attributes such as set size.
- A property included in a template can have a *defined value* or have a value that is left *unspecified*. A property with a defined value has had a specific value assigned to it (for example, a set size of 2). A property with an unspecified value does not have a specific value assigned to it. When you apply a template that includes a property with one ore

more unspecified values, the system will either use the default value (when applicable) or calculate the optimized setting for you.

- For all templates, you can either *allow overrides* of property values, or not. When you allow overrides of a property, users can modify that property's value when applying the template. When you do not allow overrides of a property, it is not possible to modify the defined value, system default, or system-calculated value for that property when applying the template.

Once you create a template, that template is saved on the system and can then be applied to create new virtual volumes or common provisioning groups.

Instructions are provided for the following:

Viewing Templates

Creating Virtual Volume Templates

Editing a Virtual Volume Template

Creating Common Provisioning Group Templates

Editing a Common Provisioning Group Template

Copying a Template

Creating Similar Templates

Removing a Template

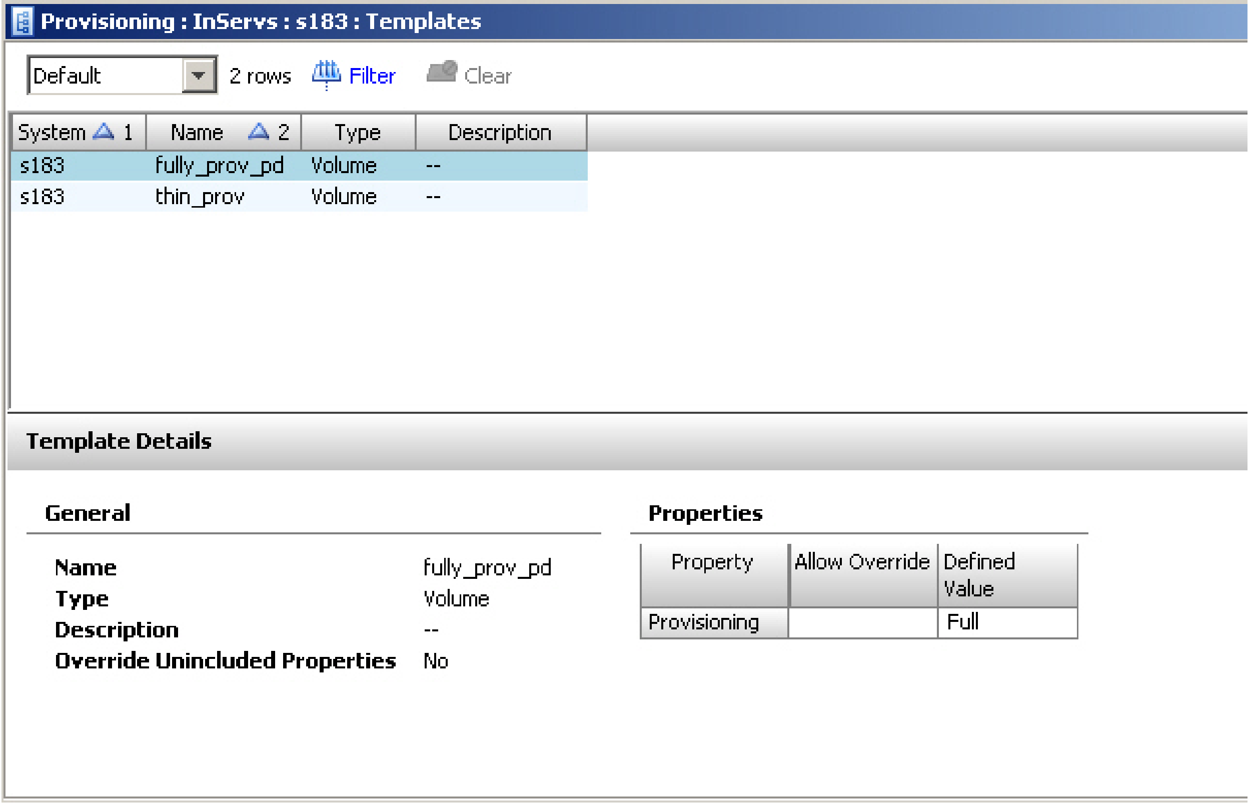
Viewing Templates

To view templates:

1. In the Manager Pane, click **Provisioning**.
2. In the Management Tree, click **Templates** under the system node you wish to view.

Note: In addition to providing comprehensive information about a system's templates, the InForm Management Console also allows you to the same type of information for specific types of templates. Each child node under the **Templates** node in the Management Tree is a specific type of template. These include **CPG** templates, **Virtual Volume** templates, and **LD** (logical disk) templates. In order to view logical disk template information, you must first set your preferences to view logical disk information; see Setting Global Preferences.

The **Templates** screen appears as follows:



System 1	Name 2	Type	Description
s183	fully_prov_pd	Volume	--
s183	thin_prov	Volume	--

Template Details

General

Name	fully_prov_pd
Type	Volume
Description	--
Override Unincluded Properties	No

Properties

Property	Allow Override	Defined Value
Provisioning		Full

The **Templates** screen is divided into an upper pane and lower pane. The upper pane displays summary information about the system's templates. The lower pane displays details about a template selected from the upper pane.

Upper Pane

The following information is displayed in the upper pane:

Column	Description
System	The name of the InServ Storage Server.
Name	The template name.
Type	The template type.
Description	User entered information about the template.

Lower Pane

The following information is displayed in the lower pane:

Group	Field	Description
General	**Name**	The template name.
	Type	The template type.
	Description	User entered information about the template.
	Override Unincluded Properties	Indicates if non-default values for unincluded properties when applying the template can be set.
Properties	**Property**	The attributes of the object.
	Allow Override	Indicates if template overrides are allowed.
	Defined Value	The value specified in the template for the corresponding property.

See also:

Manager Pane

Management Tree

Creating Virtual Volume Templates (Thinly Provisioned)

To create a virtual volume template:

1. Access the **Virtual Volumes** tab.
2. Right-click the volume from which you wish to create a template.
3. In the menu that appears, click **Save As Template**.

or

4. After accessing the **Virtual Volumes** tab, in the Main Menu Bar, click **Actions** > **Provisioning** > **Template** > **Create VV Template**.

The **Create VV Template** wizard appears.

Step 1. General

1. In the **Template** group box:
    a. System - Select the system on which the template will be created.
    b. Name - Enter the template name.
    c. (Optional) Description - Enter a template description.
    d. (Optional) Click the **Override Unincluded Properties** checKiBox to allow users to set non-default values for unincluded properties when applying the template.
2. In the **User Space** group box:
    a. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
    b. Use the following table as a guide when choosing which properties to include in a VV template, **User Space** group box:

Property	Include in the template in order to…
Size	determine the size that the volume created with this template presents to the host.
Provisioning	create a base volume template, select **Thinly Provisioned**.
CPG	select the CPG to use for user space.
Allocation Warning	generate an alert when the copy space of the VV exceeds the specified percentage of the VV size.
Allocation Limit	prevent the snapshot copy space from growing beyond the specified percentage of the VV size.

3. Click **Next** to enter copy space information, or click **Finish**.

Step 2. Copy Space Settings

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a VV template, **Copy Space Settings** screen:

Property	Include in the template in order to...
CPG	select the CPG to use for copy space.
Allocation Warning	generate an alert when the copy space of the VV exceeds the specified percentage of the VV size.
Allocation Limit	prevent the copy space from growing beyond the specified percentage of the VV size.

3. Click **Next** to enter policy and geometry information, or click **Finish**.

Step 3. Policies and Geometry

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a VV template, **Copy Settings** screen:

Property	Include in the template in order to...
Allow stale snapshots	allows stale snapshots.
Restrict export to one host	Indicates whether the VV can export to multiple hosts.
Zero-fill on partially written data pages	ensure that the host can never read old data from deleted volumes or snapshots.
Sectors Per Track	specify the number of sectors to allow per track.
Heads Per Cylinder	specify the number of heads to use per cylinder.

3. Click **Next** to view summary information, or click **Finish**.

Step 4. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

- Viewing the Virtual Volumes Tab
- Editing a Virtual Volume Template (Thinly Provisioned)

Editing a Virtual Volume Template (Thinly Provisioned)

To edit a virtual volume template:

1. Access the **Templates** screen.
2. Right-click the virtual volume template you wish to edit.
3. In the menu that appears, click **Edit**.

   The **Edit VV Template** wizard appears.

Step 1. General

1. In the **Template** group box:
   a. (Optional) Description - Enter a template description.
   b. (Optional) Click the **Override Unincluded Properties** checKiBox to allow users to set non-default values for unincluded properties when applying the template.
2. In the **User Space** group box:
   a. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
   b. Use the following table as a guide when choosing which properties to include in a VV template, **User Space** group box:

Property	Include in the template in order to...
Size	determine the size that the volume created with this template presents to the host.
Provisioning	create a base volume template, select **Thinly Provisioned**.
CPG	select the CPG to use for user space.
Allocation Warning	generate an alert when the copy space of the VV exceeds the specified percentage of the VV size.

Allocation Limit	prevent the snapshot copy space from growing beyond the specified percentage of the VV size.

3. Click **Next** to enter copy space information, or click **Finish**.

Step 2. Copy Space Settings

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a VV template, **Copy Space Settings** screen:

Property	**Include in the template in order to...**
CPG	select the CPG to use for copy space.
Allocation Warning	generate an alert when the copy space of the VV exceeds the specified percentage of the VV size.
Allocation Limit	prevent the copy space from growing beyond the specified percentage of the VV size.

3. Click **Next** to enter policy and geometry information, or click **Finish**.

Step 3. Policies and Geometry

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a VV template, **Copy Settings** screen:

Property	**Include in the template in order to...**
Allow stale snapshots	allows stale snapshots.
Restrict export to one host	Indicates whether the VV can export to multiple hosts.

Zero-fill on partially written data pages	ensure that the host can never read old data from deleted volumes or snapshots.
Sectors Per Track	specify the number of sectors to allow per track.
Heads Per Cylinder	specify the number of heads to use per cylinder.

3. Click **Next** to view summary information, or click **Finish**.

Step 4. Summary

➡Review the summary information and when satisfied, click **Finish**.

Creating a Virtual Volume Template (Fully Provisioned from Physical Disks)

To create a virtual volume template:

1. Access the **Virtual Volumes** tab.
2. Right-click the volume from which you wish to create a template.
3. In the menu that appears, click **Save As Template**.

or

4. After accessing the **Virtual Volumes** tab, in the Main Menu Bar, click **Actions** > **Provisioning** > **Template** > **Create VV Template**.

The **Create VV Template** wizard appears.

Step 1. General

1. In the **Template** group box:
   a. System - Select the system on which the template will be created.
   b. Name - Enter the template name.
   c. (Optional) Description - Enter a template description.
   d. (Optional) Click the **Override Unincluded Properties** checKiBox to allow users to set non-default values for unincluded properties when applying the template.
2. In the **User Space** group box:
   a. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to

define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.

b. Use the following table as a guide when choosing which properties to include in a VV template, **User Space** group box:

Property	Include in the template in order to...
Size	determine the size that the volume created with this template presents to the host.
Provisioning	create a base volume template, select **Fully Provisioned from PDs**.
Device Type	set the disk type, Fibre Channel (**FC**),Nearline (**NL**), or Solid State (**SSD**).
Device Speed	set the speed of the disk in K RPM.
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
RAID Type	set the VV's RAID type.
Set Size	set the VV's set size.

3. Click **Next** to enter copy space information, or click **Finish**.

Step 2. Copy Space Settings

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a VV template, **Copy Space Settings** screen:

Property	Include in the template in order to...
CPG	select the CPG to use for copy space.
Allocation	generate an alert when the copy space of the VV exceeds the

Warning	specified percentage of the VV size.
Allocation Limit	prevent the copy space from growing beyond the specified percentage of the VV size.

3. Click **Next** to enter policy and geometry information, or click **Finish**

Step 3. Allocation Settings

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template (for example, a step size of 128 KIB). Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a CPG template, **Allocation Settings** screen:

Property	**Include in the template in order to...**
Availability	set the level of failure tolerance for a volume created with this template. Choices are **Cage** - default, **Port**, **Magazine**.
Step Size	determine the number of contiguous bytes that the system accesses before moving to the next chunklet within logical disks supporting volumes created with this template. From the **Step Size** list, select 32, 64, 128, 256, or 512 KiB. For RAID 6 you can select 32, 64, or 128.
Preferred Chunklets	indicate whether the logical disks supporting volumes created with this template should tend to use chunklets near the beginning of the physical disks or the end of the physical disks. Choices are **Fast**-default, **Slow**.

3. Click **Next** to enter disk filter information, or click **Finish**.

Step 4. Disk Filter

The **Disk Filter** displays the physical disks used. **Pattern** displays the parameters of the disks used.

To modify the list of disks used:

1. Click the **Filter** icon.
2. See Filtering for details.
3. Click **Next**, or click **Finish**.

Step 5. Policies and Geometry

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a VV template, **Copy Settings** screen:

Property	**Include in the template in order to...**
Allow stale snapshots	allows stale snapshots.
Restrict export to one host	Indicates whether the VV can export to multiple hosts.
Sectors Per Track	specify the number of sectors to allow per track.
Heads Per Cylinder	specify the number of heads to use per cylinder.

3. Click **Next** to view summary information, or click **Finish**.

Step 6. Summary

➜Review the summary information and when satisfied, click **Finish**.

See also:

Viewing the Virtual Volumes Tab

Editing a Virtual Volume Template (Fully Provisioned from Physical Disks)

Editing a Virtual Volume Template (Fully Provisioned from Physical Disks)

To edit a virtual volume template:

1. Access the **Templates** screen.
2. Right-click the virtual volume template you wish to edit.
3. In the menu that appears, click **Edit**.

The **Edit VV Template** wizard appears.

Step 1. General

1. In the **Template** group box:
    a. (Optional) Description - Enter a template description.
    b. (Optional) Click the **Override Unincluded Properties** checKiBox to allow users to set non-default values for unincluded properties when applying the template.
2. In the **User Space** group box:
    a. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
    b. Use the following table as a guide when choosing which properties to include in a VV template, **User Space** group box:

Property	Include in the template in order to...
Size	determine the size that the volume created with this template presents to the host.
Provisioning	create a base volume template, select **Fully Provisioned from PDs**.
Device Type	set the disk type, Fibre Channel (**FC**),Nearline (**NL**), or Solid State (**SSD**).
Device Speed	set the speed of the disk in K RPM.
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
RAID Type	set the VV's RAID type.
Set Size	set the VV's set size.

3. Click **Next** to enter copy space information, or click **Finish**.

Step 2. Copy Space Settings

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a VV template, **Copy Space Settings** screen:

Property	Include in the template in order to...
CPG	select the CPG to use for copy space.
Allocation Warning	generate an alert when the copy space of the VV exceeds the specified percentage of the VV size.
Allocation Limit	prevent the copy space from growing beyond the specified percentage of the VV size.

3. Click **Next** to enter policy and geometry information, or click **Finish**

Step 3. Allocation Settings

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template (for example, a step size of 128 KIB). Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a CPG template, **Allocation Settings** screen:

Property	Include in the template in order to...
Availability	set the level of failure tolerance for a volume created with this template. Choices are **Cage** - default, **Port**, **Magazine**.
Step Size	determine the number of contiguous bytes that the system accesses before moving to the next chunklet within logical disks supporting volumes created with this template. From the **Step Size** list, select 32, 64, 128, 256, or 512 KiB. For RAID 6 you can select 32, 64, or 128.
Preferred Chunklets	indicate whether the logical disks supporting volumes created with this template should tend to use chunklets near the beginning of the physical disks or the end of the physical disks. Choices are **Fast**-default, **Slow**.

3. Click **Next** to enter disk filter information, or click **Finish**.

Step 4. Disk Filter

The **Disk Filter** displays the physical disks used. **Pattern** displays the parameters of the disks used.

To modify the list of disks used:

1. Click the **Filter** icon.
2. See Filtering for details.
3. Click **Next**, or click **Finish**.

Step 5. Policies and Geometry

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a VV template, **Copy Settings** screen:

Property	Include in the template in order to...
Allow stale snapshots	allows stale snapshots.
Restrict export to one host	Indicates whether the VV can export to multiple hosts.
Sectors Per Track	specify the number of sectors to allow per track.
Heads Per Cylinder	specify the number of heads to use per cylinder.

3. Click **Next** to view summary information, or click **Finish**.

Step 6. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

Viewing Templates

Filtering

Creating Common Provisioning Group Templates

To create a Common Provisioning Group (CPG) template:

1. Access the **CPGs** tab.
2. Right-click the CPG from which you wish to create a template .
3. In the menu that appears, click **Save As Template**.

   or

4. After accessing the **CPGs** tab, in the Main Menu Bar, click **Actions** > **Provisioning** > **Template** > **Create CPG Template**.

   The **Create CPG Template** wizard appears.

Step 1. General

1. In the Template group box:
   a. From the **System** list, select the system you want to create the volume on.
   b. In the **Name** text box, enter the name of the new volume (31 character maximum).
   c. (Optional) In the **Description** text box, enter a description of the template (255 character maximum).
   d. (Optional) Click the **Override Unincluded Properties** checKiBox to allow users to set non-default values for unincluded properties when applying the template.
2. In the General group box:

   a. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
   b. Use the following table as a guide when choosing which properties to include:

<table>
<tr><th>Property</th><th>Include in the template in order to...</th></tr>
<tr><td>Allocation Warning</td><td>specify the percentage of used copy administration or copy space which results in an alert.</td></tr>
<tr><td>Growth Increment</td><td>set the growth increment, different than the default. The minimum growth increment and default varies according to the number of controller nodes in the system (see table):
<table>
<tr><th># of Nodes</th><th>Default</th><th>Minimum</th></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td><table>
<tr><td>1-2</td><td>32GB</td><td>8GB</td></tr>
<tr><td>3-4</td><td>64GB</td><td>16GB</td></tr>
<tr><td>5-6</td><td>96GB</td><td>24GB</td></tr>
<tr><td>7-8</td><td>128GB</td><td>32GB</td></tr>
</table></td></tr>
<tr><td>Growth Warning</td><td>set the threshold when the LD space exceeds this amount.</td></tr>
<tr><td>Growth Limit</td><td>set the threshold at which the system stops creating additional LDs to support volumes that draw space from a CPG.</td></tr>
<tr><td>Device Type</td><td>set the disk type to Fibre Channel (FC), Nearline (NL), or Solid State (SSD).</td></tr>
<tr><td>Device Speed</td><td>set the disk speed.</td></tr>
<tr><td colspan="2">Note: The Device Speed number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.</td></tr>
<tr><td>RAID Type</td><td>set the VV's RAID type.</td></tr>
<tr><td>Set Size</td><td>specify the VV's set size.</td></tr>
</table>

3. Click **Next** to enter allocation setting information, or click **Finish**.

Step 2. Allocation Settings

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template (for example, a step size of 128 KIB). Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a CPG template, **Allocation Settings** screen:

Property	Include in the template in order to...
Availability	set the level of failure tolerance for a volume created with this template. Choices are **Cage** - default, **Port**, **Magazine**.
Step Size	determine the number of contiguous bytes that the system accesses before moving to the next chunklet within logical disks supporting volumes created with this template. From the **Step Size** list, select 32, 64, 128, 256, or 512 KiB. For RAID 6 you can select 32, 64, or 128.
Preferred Chunklets	indicate whether the logical disks supporting volumes created with this template should tend to use chunklets near the beginning of the physical disks or the end of the physical disks. Choices are **Fast**-default, **Slow**.

3. Click **Next** to enter disk filter information, or click **Finish**.

Step 3. Disk Filter

The **Disk Filter** displays the physical disks used. **Pattern** displays the parameters of the disks used.

To modify the list of disks used:

1. Click the **Filter** icon.
2. See Filtering for details.
3. Click **Next** to view summary information, or click **Finish**.

Step 4. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

Viewing the CPGs Tab

Filtering

Editing a Common Provisioning Group Template

To edit a Common Provisioning Group (CPG) template:

1. Access the **Templates** screen.
2. Right-click the CPG template you wish to edit.
3. In the menu that appears, click **Edit**

   The **Edit CPG Template** wizard appears.

Step 1. General

1. In the Template group box:
   a. (Optional) In the **Description** text box, enter a description of the template (255 character maximum).
   b. (Optional) Click the **Override Unincluded Properties** checKiBox to allow users to set non-default values for unincluded properties when applying the template.
2. In the General group box:

   a. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template. Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
   b. Use the following table as a guide when choosing which properties to include:

<table>
<tr><th>Property</th><th>Include in the template in order to...</th></tr>
<tr><td>Allocation Warning</td><td>specify the percentage of used copy administration or copy space which results in an alert.</td></tr>
<tr><td>Growth Increment</td><td>set the growth increment, different than the default. The minimum growth increment and default varies according to the number of controller nodes in the system (see table):
<table>
<tr><th># of Nodes</th><th>Default</th><th>Minimum</th></tr>
<tr><td>1-2</td><td>32GB</td><td>8GB</td></tr>
<tr><td>3-4</td><td>64GB</td><td>16GB</td></tr>
<tr><td>5-6</td><td>96GB</td><td>24GB</td></tr>
</table>
</td></tr>
</table>

7-8	128GB	32GB

Growth Warning	set the threshold when the LD space exceeds this amount.
Growth Limit	set the threshold at which the system stops creating additional LDs to support volumes that draw space from a CPG.
Device Type	set the disk type to Fibre Channel (**FC**), Nearline (**NL**), or Solid State (**SSD**).
Device Speed	set the disk speed.
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
RAID Type	set the VV's RAID type.
Set Size	specify the VV's set size.

3. Click **Next** to enter allocation setting information, or click **Finish**.

Step 2. Allocation Settings

1. In the **Include** column on the left, check the appropriate boxes to include properties in the template. The list of values for each property are listed in the **Defined Value** column on the right. Include any properties for which you wish to define specific values to be used by the template (for example, a step size of 128 KIB). Checking the **Allow Override** checKiBox allow users to modify that property's value when applying the template.
2. Use the following table as a guide when choosing which properties to include in a CPG template, **Allocation Settings** screen:

Property	Include in the template in order to...
Availability	set the level of failure tolerance for a volume created with this template. Choices are **Cage** - default, **Port**, **Magazine**.
Step Size	determine the number of contiguous bytes that the system accesses before moving to the next chunklet within logical disks supporting volumes created with this template. From the **Step Size** list, select 32,

	64, 128, 256, or 512 KiB. For RAID 6 you can select 32, 64, or 128.
Preferred Chunklets	indicate whether the logical disks supporting volumes created with this template should tend to use chunklets near the beginning of the physical disks or the end of the physical disks. Choices are **Fast**-default, **Slow**.

3. Click **Next** to enter disk filter information, or click **Finish**.

Step 3. Disk Filter

The **Disk Filter** displays the physical disks used. **Pattern** displays the parameters of the disks used.

To modify the list of disks used:

1. Click the **Filter** icon.
2. See Filtering for details.
3. Click **Next** to view summary information, or click **Finish**.

Step 4. Summary

⇨Review the summary information and when satisfied, click **Finish**.

See also:

Viewing Templates

Filtering

Copying a Template

To copy a Common Provisioning Group (CPG) or virtual volume template:

1. Access the **Templates** screen.
2. Right-click the CPG or virtual volume template you wish to copy.
3. In the menu that appears, click **Copy Template**.

   The **Copy Template** dialog box appears.

> **Note:** In the **Source** group box, the **System** and **Template** fields are populated from the template you selected to copy from. You can choose a different template to copy.

4. In the **Destination** group box:
   a. Select the system where you wish to copy the template.
   b. Enter a name for the new template (31 character maximum) in the **Template Name** text box.
5. Click **OK**.

See also:

Viewing Templates

Creating Similar Templates

You can create new Common Provisioning Group (CPG) and virtual volume templates based on existing templates. To do this:

1. Access the **Templates** screen.
2. Right-click the CPG or virtual volume template you wish to use as the basis for your new template.
3. In the menu that appears, click **Create Similar**.

   The Create CPG Template or Create VV Template wizard appears.

4. Follow the instructions in Creating Common Provisioning Group Templates or Creating Virtual Volume Templates.

See also:

Viewing Templates

Creating Common Provisioning Group Templates

Creating Virtual Volume Templates

Removing a Template

To remove a template:

1. Access the **Templates** screen.
2. Right-click the template you wish to remove.
3. In the menu that appears, click **Remove**.

   The **Remove Template** dialog box appears.

4. Click **OK**.

See also:

Viewing Templates

Working with Virtual Copies

The InForm Management Console allows you to view, create, edit, remove, and promote virtual copies.

Viewing Virtual Copies

Creating a Virtual Copy

Editing a Virtual Copy

Removing a Virtual Copy

Creating a Consistency Group Virtual Copy

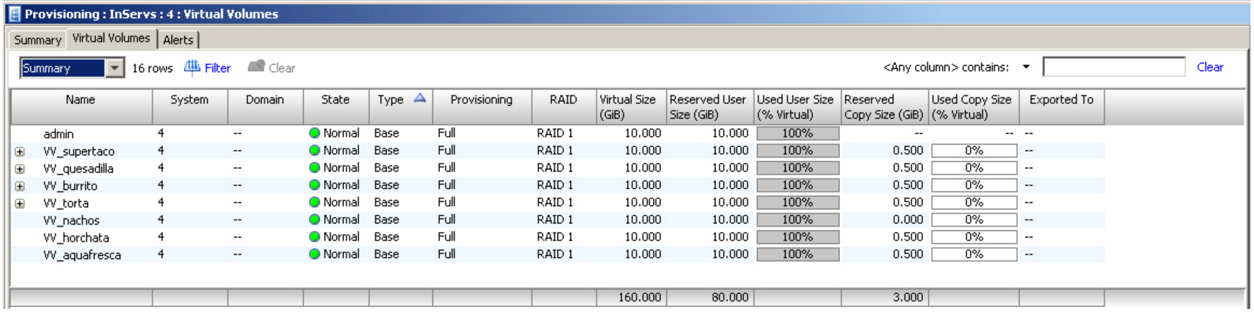
Creating a Batch Virtual Copy

Promoting a Virtual Copy

Viewing Virtual Copies

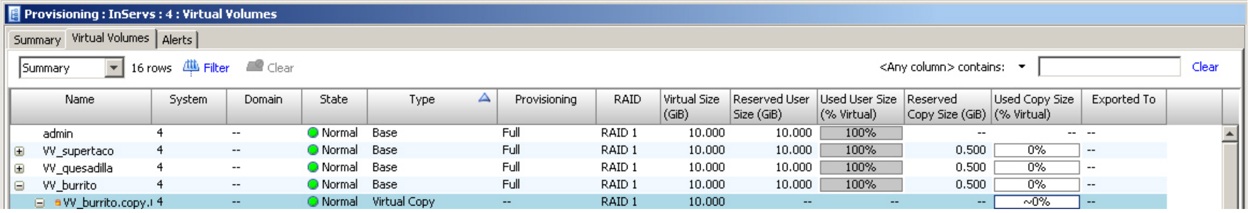
Virtual copies are displayed on the **Virtual Volumes** tab.

➜To view virtual copies, access the **Virtual Volumes** tab.


Provisioning : InServs : 4 : Virtual Volumes
Summary
Virtual Volumes
Alerts
Summary
16 rows
Filter
Clear
<Any column> contains:
Clear

Name	System	Domain	State	Type	Provisioning	RAID	Virtual Size (GiB)	Reserved User Size (GiB)	Used User Size (% Virtual)	Reserved Copy Size (GiB)	Used Copy Size (% Virtual)	Exported To
admin	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	--	--	--
⊞ VV_supertaco	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
⊞ VV_quesadilla	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
⊞ VV_burrito	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
⊞ VV_torta	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
VV_nachos	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.000	0%	--
VV_horchata	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
VV_aquafresca	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
							160.000	80.000		3.000		

A volume name displaying a plus (+) sign to the left indicates that at least one virtual copy of that volume exists. Clicking the plus sign expands the volume displaying the virtual copy.


Provisioning : InServs : 4 : Virtual Volumes
Summary
Virtual Volumes
Alerts
Summary
16 rows
Filter
Clear
<Any column> contains:
Clear

Name	System	Domain	State	Type	Provisioning	RAID	Virtual Size (GiB)	Reserved User Size (GiB)	Used User Size (% Virtual)	Reserved Copy Size (GiB)	Used Copy Size (% Virtual)	Exported To
admin	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	--	--	--
⊞ VV_supertaco	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
⊞ VV_quesadilla	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
⊟ VV_burrito	4	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
⊟ VV_burrito.copy.I	4	--	● Normal	Virtual Copy	--	RAID 1	10.000	--	--	--	~0%	--

See Viewing the Virtual Volumes Tab.

See also:

- Viewing the Virtual Volumes Tab
- Viewing Physical Copies

Creating a Virtual Copy

To create a virtual copy:

1. In the Manager Pane, click **Provisioning**.
2. In the Common Actions Panel, click **Create Virtual Copy**.

   The **Create Virtual Copy** dialog box appears.

3. **System** - Select the system on which the virtual copy will be created.
4. (Optional) **Domain** - Select the domain in which the virtual copy will reside.

5. **Parent Volume** - Select the virtual copy's parent volume.
6. **Destination Volume** - Enter the destination volume's name.

Note: If you selected a virtual volume set from the **Parent Volume** list, the **Destination Volume** field is automatically populated with **@vvname@.copy**, meaning that **@vvname@** is replaced with the names of the virtual volumes belonging to the selected virtual volume set. For example, if your virtual volume set contains virtual volumes named **VV1**, **VV2**, and **VV3**, the destination virtual volumes will be named **VV1.copy**, **VV2.copy**, and **VV3.copy**. If you wish to edit the way the destination volumes are named, click the **Edit** button (✎) to the right of the **Destination Volume** field to access the **Edit Volume Set Name** dialog box.

7. **Comments** - Enter any notes.
8. If you wish to set a retention time, click the **Retention Time** checKiBox, enter a value in the corresponding field, and select a unit of measure, **day(s)** or **hour(s)**.
9. If you wish to set an expiration time, click the **Expiration Time** checKiBox, enter a value in the corresponding field, and select a unit of measure, **day(s)** or **hour(s)**.
10. Click **OK**.

See also:

- Manager Pane
- Common Actions Panel
- Viewing the Virtual Volumes Tab

Editing a Virtual Copy

To edit a virtual copy:

1. Access the **Virtual Volumes** tab.
2. Right-click the virtual copy you wish to edit and select Edit.

   The **Edit Virtual Copy** dialog box appears.

3. **Destination Volume** - Enter a new destination volume.
4. **Comments** - Enter any notes about the virtual copy.
5. **Retention Time** - Select **day(s)** or **hour(s)** and then enter a value from **1** to **14**, or **1** to **366**, respectively.
6. **Expiration Time** - Select **day(s)** or **hour(s)** and then enter a value from **1** to **1,825**, or **1** to **43,800**, respectively.

7. Click **OK**.

See also:

Viewing Virtual Copies

Removing a Virtual Copy

To remove a virtual copy:

1. Access the **Virtual Volumes** tab.
2. Right-click the virtual copy you wish to remove.
3. In the menu that appears, click **Remove**.

   The **Remove Virtual Volume** dialog box appears.

4. (Optional) Select to remove volumes and descendents without active VLUNs, associated with inactive VLUNs, and from volume sets.
5. Click **OK**.

See also:

Viewing Virtual Copies

Creating a Consistency Group Virtual Copy

To create a consistency group virtual copy:

1. Access the **Virtual Volumes** tab.
2. Select two or more virtual volumes with copy space.
3. Right-click the selected volumes.
4. In the menu that appears, click **Create Consistency Group Virtual Copies**.

   The **Create Consistency Group Virtual Copies** dialog box appears.

5. If you wish to modify the name of a copy, double-click any name in the **Name** column and then enter a new name.

6. If you wish to set a retention time, select the **Retention Time** checKiBox, enter a value in the corresponding field, and select a unit of measure, **day(s)** or **hour(s)**.
7. If you wish to set an expiration time, select the **Expiration Time** checKiBox, enter a value in the corresponding field, and select a unit of measure, **day(s)** or **hour(s)**.
8. Enter any notes in the **Comments** text box.
9. Click **OK**.

See also:

Viewing the Virtual Volumes Tab

Selecting Multiple Items

Creating a Batch Virtual Copy

To create a batch virtual copy:

1. Access the **Virtual Volumes** tab.
2. Select two or more virtual volumes with copy space.
3. Right-click the selected volumes.
4. In the menu that appears, click **Create Batch Virtual Copy**.

   The **Create Batch Virtual Copies** dialog box appears.

5. If you wish to modify the name of a copy, double-click any name in the **Name** column and then enter a new name.
6. Click the appropriate option button (**Read Only** or **Read/Write**).
7. (Optional) In the **Suffix** text box, enter a suffix to append the existing volume name if you did not modify previously the name.
8. If you wish to set a retention time, select the **Retention Time** checKiBox, enter a value in the corresponding field, and select a unit of measure, **day(s)** or **hour(s)**.
9. If you wish to set an expiration time, select the **Expiration Time** checKiBox, enter a value in the corresponding field, and select a unit of measure, **day(s)** or **hour(s)**.
10. Enter any notes in the **Comments** text box.
11. Click **OK**.

See also:

Viewing the Virtual Volumes Tab

Selecting Multiple Items

Promoting a Virtual Copy

To promote a virtual copy to a base volume:

1. Access the **Virtual Volumes** tab to view the system's virtual copies.
2. Right-click the virtual copy you wish to promote.
3. In the menu that appears, click **Promote Virtual Copy**.

   The **Promote Virtual Copy** dialog box appears.

4. Select a target volume from the **Target Virtual Volume** list.
5. Click **OK**.
6. When prompted for confirmation to continue, click **Yes**.

See also:

Viewing the Virtual Volumes Tab

Viewing Virtual Copies

Working with Physical Copies

The InForm Management Console allows you to view, create, edit, and manage physical copies.

Viewing Physical Copies

Creating a Physical Copy

Editing a Physical Copy

Removing a Physical Copy

Creating a Consistency Group Physical Copy

Stopping a Physical Copy

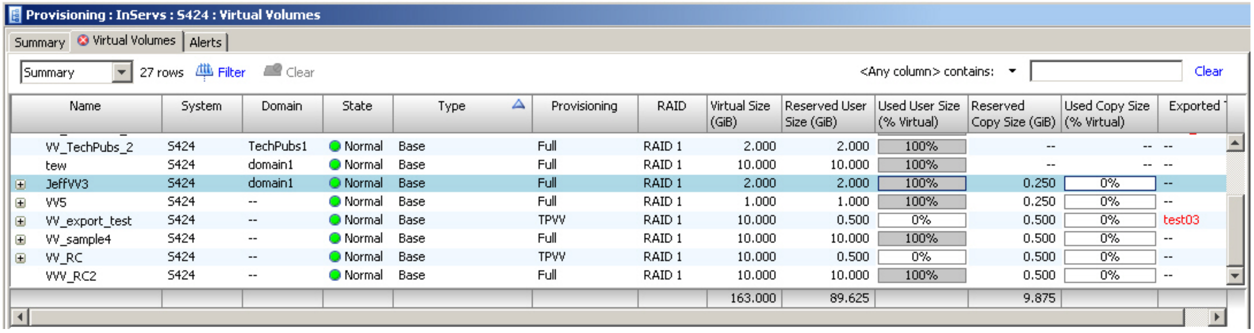
Resynchronizing a Physical Copy

Promoting a Physical Copy

Viewing Physical Copies

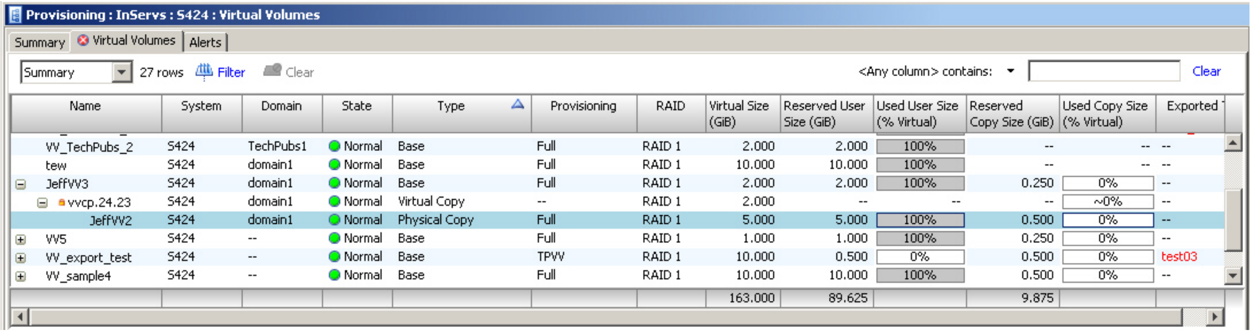
Physical copies are displayed on the **Virtual Volumes** tab.

➜To view physical copies, access the **Virtual Volumes** tab.


Provisioning : InServs : S424 : Virtual Volumes
Summary
Virtual Volumes
Alerts
Summary
27 rows
Filter
Clear
<Any column> contains:
Clear

Name	System	Domain	State	Type	Provisioning	RAID	Virtual Size (GiB)	Reserved User Size (GiB)	Used User Size (% Virtual)	Reserved Copy Size (GiB)	Used Copy Size (% Virtual)	Exported
VV_TechPubs_2	S424	TechPubs1	● Normal	Base	Full	RAID 1	2.000	2.000	100%	--	--	--
tew	S424	domain1	● Normal	Base	Full	RAID 1	10.000	10.000	100%	--	--	--
⊞ JeffVV3	S424	domain1	● Normal	Base	Full	RAID 1	2.000	2.000	100%	0.250	0%	--
⊞ VV5	S424	--	● Normal	Base	Full	RAID 1	1.000	1.000	100%	0.250	0%	--
⊞ VV_export_test	S424	--	● Normal	Base	TPVV	RAID 1	10.000	0.500	0%	0.500	0%	test03
⊞ VV_sample4	S424	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
⊞ VV_RC	S424	--	● Normal	Base	TPVV	RAID 1	10.000	0.500	0%	0.500	0%	--
VVV_RC2	S424	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
							163.000	89.625		9.875		

A virtual copy name displaying a plus (+) sign to the left indicates that at least one physical copy exists. Clicking the plus sign expands the virtual copy displaying the physical copy.


Provisioning : InServs : S424 : Virtual Volumes
Summary
Virtual Volumes
Alerts
Summary
27 rows
Filter
Clear
<Any column> contains:
Clear

Name	System	Domain	State	Type	Provisioning	RAID	Virtual Size (GiB)	Reserved User Size (GiB)	Used User Size (% Virtual)	Reserved Copy Size (GiB)	Used Copy Size (% Virtual)	Exported
VV_TechPubs_2	S424	TechPubs1	● Normal	Base	Full	RAID 1	2.000	2.000	100%	--	--	--
tew	S424	domain1	● Normal	Base	Full	RAID 1	10.000	10.000	100%	--	--	--
⊟ JeffVV3	S424	domain1	● Normal	Base	Full	RAID 1	2.000	2.000	100%	0.250	0%	--
⊟ vvcp.24.23	S424	domain1	● Normal	Virtual Copy	--	RAID 1	2.000	--	--	--	~0%	--
JeffVV2	S424	domain1	● Normal	Physical Copy	Full	RAID 1	5.000	5.000	100%	0.500	0%	--
⊞ VV5	S424	--	● Normal	Base	Full	RAID 1	1.000	1.000	100%	0.250	0%	--
⊞ VV_export_test	S424	--	● Normal	Base	TPVV	RAID 1	10.000	0.500	0%	0.500	0%	test03
⊞ VV_sample4	S424	--	● Normal	Base	Full	RAID 1	10.000	10.000	100%	0.500	0%	--
							163.000	89.625		9.875		

See Viewing the Virtual Volumes Tab.

See also:

Viewing the Virtual Volumes Tab

Viewing Virtual Copies

Creating a Physical Copy

To create a physical copy:

1. In the Manager Pane, click **Provisioning**.
2. In the Common Actions Panel, click **Create Physical Copy**.

The **Create Physical Copy** dialog box appears.

3. From the **System** list, select the system on which the physical copy will be created.
4. (Optional) From the **Domain** list, select the domain in which the copy will reside.
5. From **Parent Volume** list, select the volume to copy from.
6. From **Destination Volume** list, select the volume to copy to.
7. (Optional) If you want to save a snapshot of the physical copy, in order to resynchronize the base volume and physical copy at a later point in time, click **Save snapshot for later resync**.
8. Click **OK**.

See also:

Manager Pane

Common Actions Panel

Viewing the Virtual Volumes Tab

Editing a Physical Copy

To edit a physical copy:

1. Access the **Virtual Volumes** tab.
2. Right-click the physical copy you wish to edit and select Edit.

   The **Edit Physical Copy** dialog box appears.

3. Enter a new name in the **Name** field**.**
4. If you wish to save the snapshot for resynchronization, select **Save snapshot for later resync**.
5. Click **OK**.

See also:

Viewing Physical Copies

Removing a Physical Copy

To remove a physical copy:

1. Access the **Virtual Volumes** tab.
2. Right-click the physical copy you wish to remove.
3. In the menu that appears, click **Remove**.

   The **Remove Virtual Volume** dialog box appears.

4. (Optional) Select to remove volumes and descendents without active VLUNs, associated with inactive VLUNs, and from volume sets.
5. Click **OK**.

See also:

Viewing Physical Copies

Creating a Consistency Group Physical Copy

To create a consistency group physical copy:

1. Access the **Virtual Volumes** tab.
2. Select two or more virtual volumes with copy space.
3. In the Main Menu Bar, click **Actions** > **Provisioning** > **Virtual Volume** > **Create Consistency Group Physical Copies**.

   The **Create Consistency Group Physical Copies** dialog box appears.

4. From the **System** list, select the system on which the physical copy will be created.
5. (Optional) From the **Domain** list, select the domain in which the physical copy will reside.
6. From **Parent Volume** list, select the volume to copy from.
7. From **Destination Volume** list, select the volume to copy to.
8. (Optional) If you want to save a snapshot of the physical copy, in order to resynchronize the base volume and physical copy at a later point in time, click **Save snapshot for later resync**.
9. Click **OK**.

See also:

Viewing the Virtual Volumes Tab

Selecting Multiple Items

Stopping a Physical Copy

To stop a physical copy in progress:

1. Access the **Virtual Volumes** tab.
2. Select the physical copy in progress that you wish to stop.
3. In the Main Menu Bar, click **Actions** > **Provisioning** > **Virtual Volume** > **Stop Physical Copy**.

   The **Stop Physical Copy** dialog box appears.

4. Click **Yes**.

See also:

Viewing the Virtual Volumes Tab

Viewing Physical Copies

Resynchronizing a Physical Copy

To resynchronize a physical copy:

1. Access the **Virtual Volumes** tab.
2. Right-click the physical copy you wish to resynchronize.
3. In the menu that appears, click Resync Physical Copy.

   The **Resync Physical Copy** dialog box appears.

4. From the **System** list, select the system on which the copy resides.
5. (Optional) From the **Domain** list, select the domain in which the copy is resynchronized.
6. From the **Physical Copy** list, select the physical copy to which you wish to resynchronize.
7. (Optional) If you want to save a snapshot of the physical copy, in order to resynchronize the base volume and physical copy at a later point in time, click the **Save snapshot for later resync** checKiBox.

8. Click **OK**.

See also:

Viewing the Virtual Volumes Tab

Viewing Physical Copies

Promoting a Physical Copy

To promote a physical copy:

1. Access the **Virtual Volumes** tab to view the system's physical copies.
2. Right-click the physical copy you wish to promote.
3. In the menu that appears, click **Promote Physical Copy**.

   The **Promote Physical Copy** dialog box appears.

4. Click **Yes** to confirm the copy promotion.

See also:

Viewing the Virtual Volumes Tab

Viewing Physical Copies

Working with the Layout Grid Manager

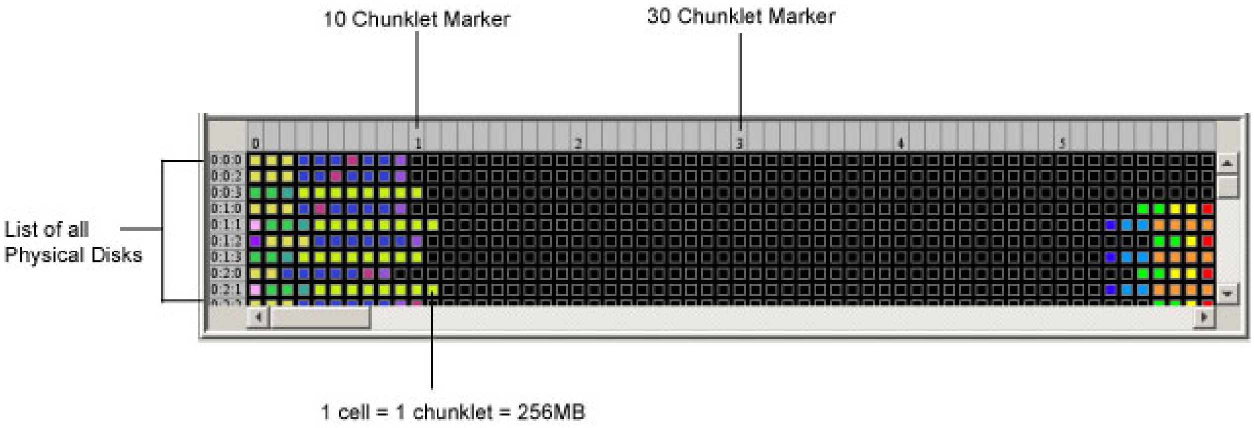
The **Layout Grid Manager** allows you to view layout grids showing patterns of physical disk, logical disk, virtual volume, and Common Provisioning Group (CPG) usage. These grids can be used to monitor resource allocation.

Note: Logical disk information only appears if you have set your preferences in the InForm Management Console to display logical disk information. See Setting Global Preferences.

The following topics discuss each layout grid:

- Viewing Layout Information for All InServs
- Viewing the Virtual Volumes Layout Screen
- Viewing the CPGs Layout Screen
- Viewing the Logical Disks Layout Screen

The following figure describes the structure of each layout grid:


10 Chunklet Marker
30 Chunklet Marker
List of all Physical Disks
0
1
2
3
4
5
0:0:0
0:0:2
0:0:3
0:1:0
0:1:1
0:1:2
0:1:3
0:2:0
0:2:1
1 cell = 1 chunklet = 256MB

All types of chunklet grid screens share the same basic features:

- The far left column lists all physical disks in the storage server using the format: <cage_ID>:<magazine_position>:<disk_position>
  - <cage_ID> can be 0 (left side of the drive chassis) or 1 (right side of the drive chassis).
  - <magazine_position> can be 0, 1, 2, 3, or 4.
  - <disk_position> can be 0, 1, 2, 3, or 4, where 0 is the position closest to the backplane.

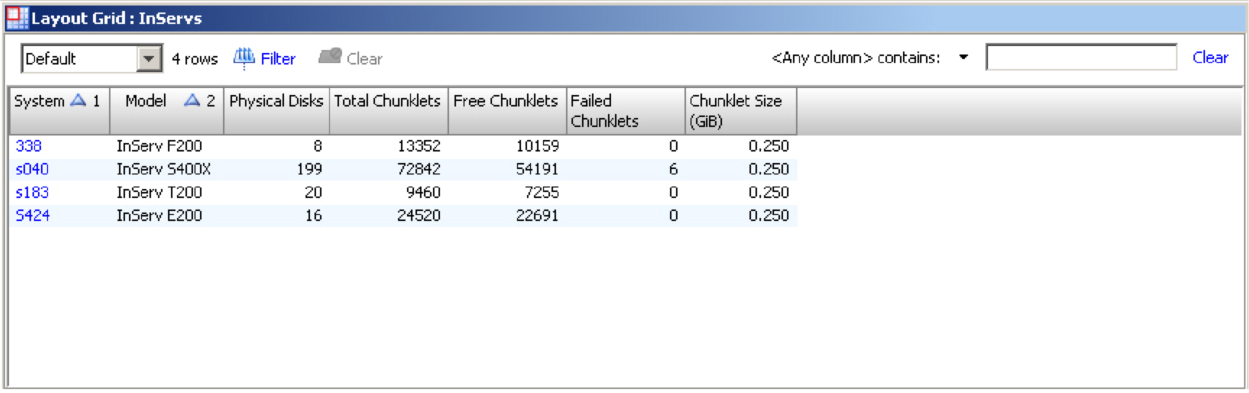
- Each row represents the storage space of the disk indicated in the left column, with each cell in the grid representing one chunklet, or 256 megabytes.
- Markers indicating the quantity of chunklets in multiples of 10 appear along the top of the grid.

Viewing Layout Information for All InServs

To view layout information for all connected InServ Storage Servers:

1. In the Manager Pane, click **Layout Grid**.
2. In the Management Tree, click **InServs**.

The Layout screen displays information for each connected InServ Storage Server, including the number of physical disks, chunklets, free chunklets, failed chunklets, and chunklet size (in GiB) for each system.



System 1	Model 2	Physical Disks	Total Chunklets	Free Chunklets	Failed Chunklets	Chunklet Size (GiB)
338	InServ F200	8	13352	10159	0	0.250
s040	InServ S400X	199	72842	54191	6	0.250
s183	InServ T200	20	9460	7255	0	0.250
S424	InServ E200	16	24520	22691	0	0.250

Each system listed in the **System** column is a link to the layout grid for an individual system.

See also:

Manager Pane

Management Tree

Viewing the Layout Grid for a Single System

The layout grid for a single system is presented on three tabs, **Virtual Volumes, CPGs**, and **Logical Disks**. The chunklets for all virtual volumes, Common Provisioning Groups (CPGs), and logical disks are displayed.

Note: The **Logical Disks** tab only appears if you have set your preferences in the InForm Management Console to display logical disk information. See Setting Global Preferences.

Viewing_the_Virtual_Volume_Layout_Grid

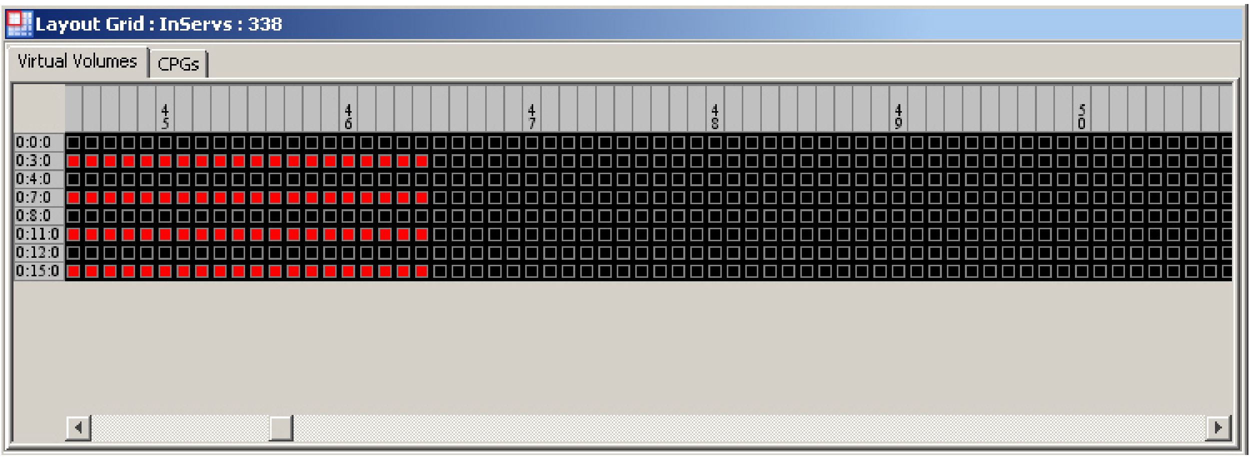
Viewing_the_CPG_Layout_Grid

Viewing_the_Logical_Disk_Layout_Grid

Viewing the Virtual Volume Layout Grid

To view the virtual volume layout for a single system:

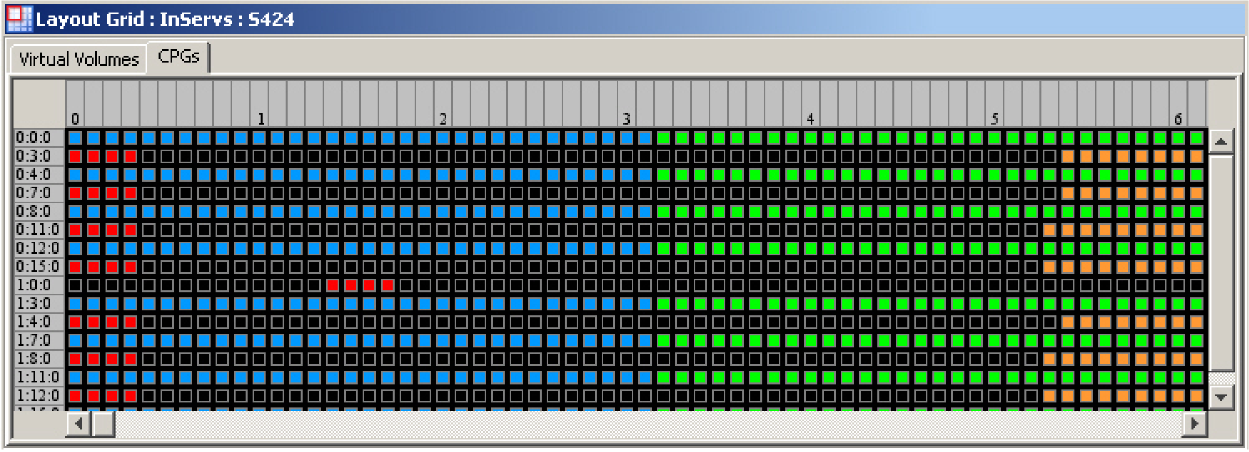
1. In the Manager Pane, click **Layout Grid**.
2. In the Management Tree, click the system with the volumes you wish to view.
3. In the Management Window, click the **Virtual Volumes** tab.



Viewing the CPG Layout Grid

To view the CPG layout for a single system:

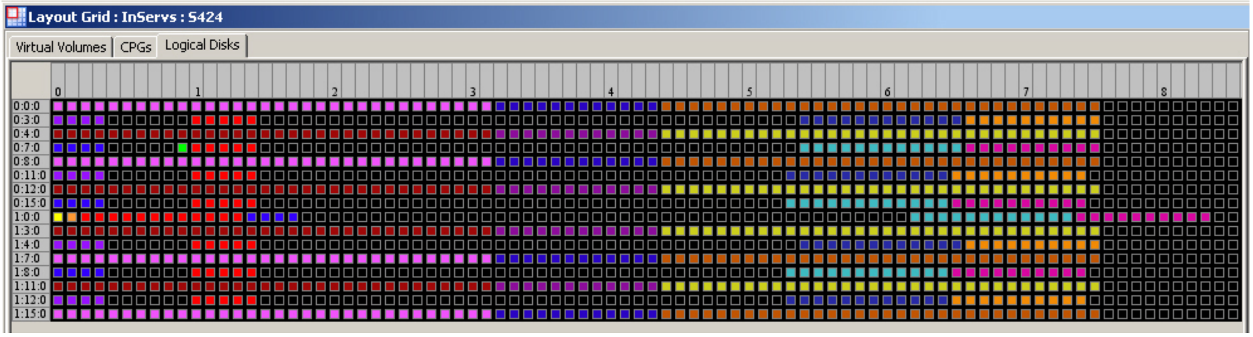
1. In the Manager Pane, click **Layout Grid**.
2. In the Management Tree, click the system with the CPGs you wish to view.
3. In the Management Window, click the **CPGs** tab.


Layout Grid : InServs : S424
Virtual Volumes
CPGs
0
1
2
3
4
5
6
0:0:0
0:3:0
0:4:0
0:7:0
0:8:0
0:11:0
0:12:0
0:15:0
1:0:0
1:3:0
1:4:0
1:7:0
1:8:0
1:11:0
1:12:0

Viewing the Logical Disk Layout Grid

To view the logical disk layout for a single system:

1. In the Manager Pane, click **Layout Grid**.
2. In the Management Tree, click the system with the logical disks you wish to view.
3. In the Management Window, click the **Logical Disks** tab.


Layout Grid : InServs : S424
Virtual Volumes
CPGs
Logical Disks
0
1
2
3
4
5
6
7
8
0:0:0
0:3:0
0:4:0
0:7:0
0:8:0
0:11:0
0:12:0
0:15:0
1:0:0
1:3:0
1:4:0
1:7:0
1:8:0
1:11:0
1:12:0
1:15:0

See also:

Manager Pane

Management Tree

Viewing Layout Information for All InServs

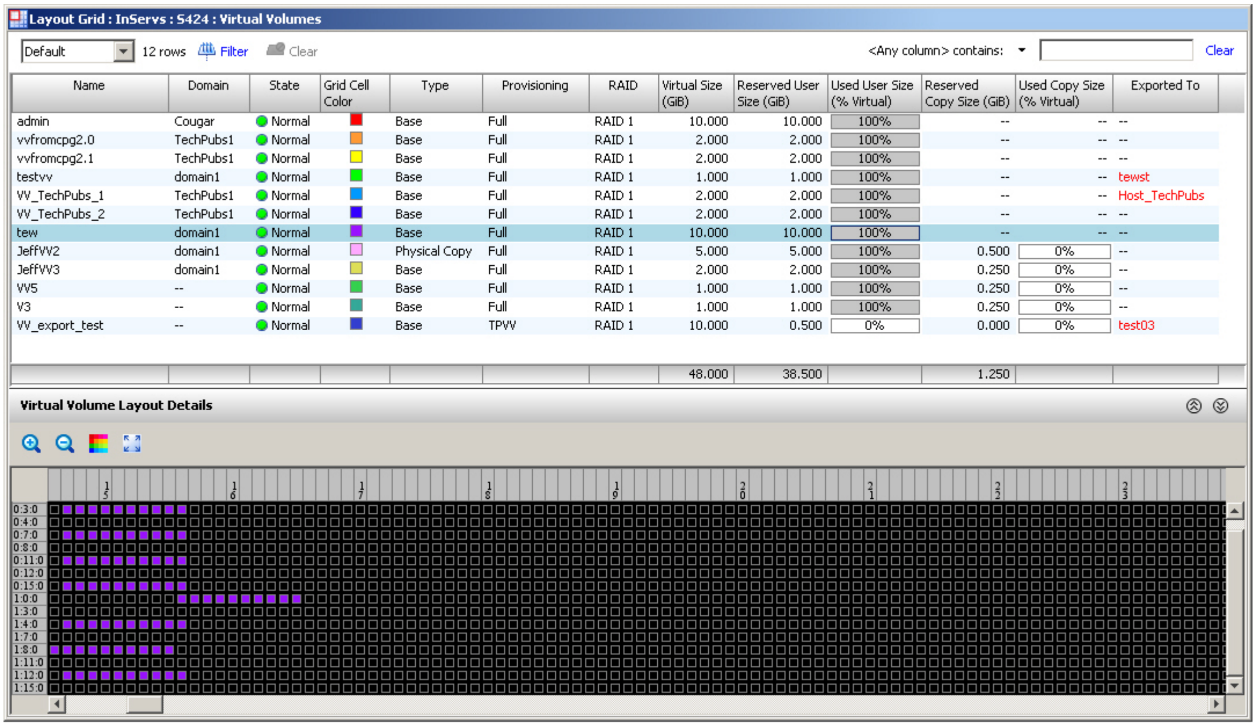
Viewing the Virtual Volumes Layout Screen

The virtual volumes layout screen allows you to see the distribution of virtual volumes across physical disks and which chunklets are used by each virtual volume. The virtual volume layout screen is split into an upper pane, which shows a summary of virtual volumes in the system, and a lower pane, which shows the chunklet layout details for a selected volume from the upper pane.

To view the virtual volumes layout screen:

1. In the Manager Pane, click **Layout Grid**.
2. In the Management Tree, click **Virtual Volumes** under the system you wish to view.

The virtual volume layout screen appears as follows:


Layout Grid : InServs : S424 : Virtual Volumes
Default
12 rows
Filter
Clear
<Any column> contains:
Clear
Virtual Volume Layout Details

Name	Domain	State	Grid Cell Color	Type	Provisioning	RAID	Virtual Size (GiB)	Reserved User Size (GiB)	Used User Size (% Virtual)	Reserved Copy Size (GiB)	Used Copy Size (% Virtual)	Exported To
admin	Cougar	● Normal	🟥	Base	Full	RAID 1	10.000	10.000	100%	--	--	--
vvfromcpg2.0	TechPubs1	● Normal	🟧	Base	Full	RAID 1	2.000	2.000	100%	--	--	--
vvfromcpg2.1	TechPubs1	● Normal	🟨	Base	Full	RAID 1	2.000	2.000	100%	--	--	--
testvv	domain1	● Normal	🟩	Base	Full	RAID 1	1.000	1.000	100%	--	--	tewst
VV_TechPubs_1	TechPubs1	● Normal	🟦	Base	Full	RAID 1	2.000	2.000	100%	--	--	Host_TechPubs
VV_TechPubs_2	TechPubs1	● Normal	🟦	Base	Full	RAID 1	2.000	2.000	100%	--	--	--
tew	domain1	● Normal	🟪	Base	Full	RAID 1	10.000	10.000	100%	--	--	--
JeffVV2	domain1	● Normal	🟪	Physical Copy	Full	RAID 1	5.000	5.000	100%	0.500	0%	--
JeffVV3	domain1	● Normal	🟨	Base	Full	RAID 1	2.000	2.000	100%	0.250	0%	--
VV5	--	● Normal	🟩	Base	Full	RAID 1	1.000	1.000	100%	0.250	0%	--
V3	--	● Normal	🟩	Base	Full	RAID 1	1.000	1.000	100%	0.250	0%	--
VV_export_test	--	● Normal	🟦	Base	TPVV	RAID 1	10.000	0.500	0%	0.000	0%	test03
							48.000	38.500		1.250		

See also:

[Manager Pane](#)

[Management Tree](#)

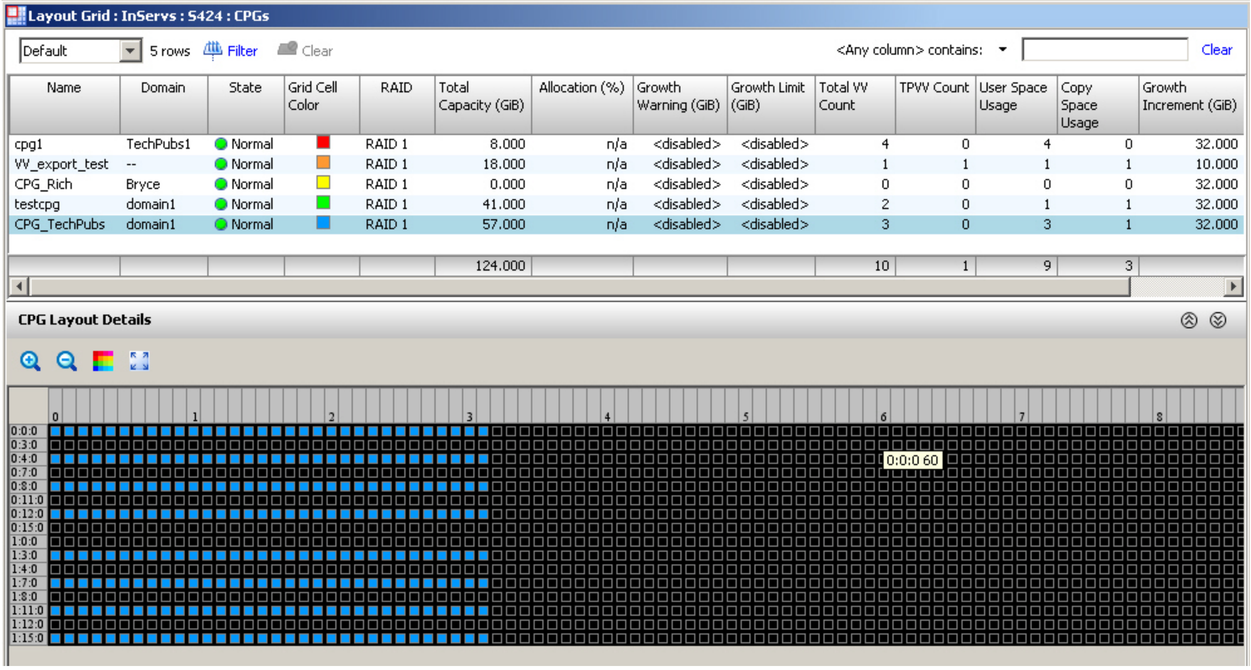
Viewing the CPGs Layout Screen

The Common Provisioning Groups (CPGs) layout screen allows you to see the distribution of CPGs across physical disks and which chunklets are used by each CPG. The CPG layout screen is split into an upper pane, which shows a summary of CPGs in the system, and a lower pane, which shows the chunklet layout details for a selected CPG from the upper pane.

To view the CPGs layout screen:

1. In the Manager Pane, click **Layout Grid**.
2. In the Management Tree, click **CPGs** under the system you wish to view.

The CPGs layout screen appears as follows:


Layout Grid : InServs : S424 : CPGs
Default
5 rows
Filter
Clear
<Any column> contains:
Clear

Name	Domain	State	Grid Cell Color	RAID	Total Capacity (GiB)	Allocation (%)	Growth Warning (GiB)	Growth Limit (GiB)	Total VV Count	TPVV Count	User Space Usage	Copy Space Usage	Growth Increment (GiB)
cpg1	TechPubs1	● Normal	🟥	RAID 1	8.000	n/a	<disabled>	<disabled>	4	0	4	0	32.000
VV_export_test	--	● Normal	🟧	RAID 1	18.000	n/a	<disabled>	<disabled>	1	1	1	1	10.000
CPG_Rich	Bryce	● Normal	🟨	RAID 1	0.000	n/a	<disabled>	<disabled>	0	0	0	0	32.000
testcpg	domain1	● Normal	🟩	RAID 1	41.000	n/a	<disabled>	<disabled>	2	0	1	1	32.000
CPG_TechPubs	domain1	● Normal	🟦	RAID 1	57.000	n/a	<disabled>	<disabled>	3	0	3	1	32.000
					124.000				10	1	9	3	

CPG Layout Details
0
1
2
3
4
5
6
7
8
0:0:0
0:3:0
0:4:0
0:7:0
0:8:0
0:11:0
0:12:0
0:15:0
1:0:0
1:3:0
1:4:0
1:7:0
1:8:0
1:11:0
1:12:0
1:15:0
0:0:0 60

See also:

[Manager Pane]

[Management Tree]

Viewing the Logical Disks Layout Screen

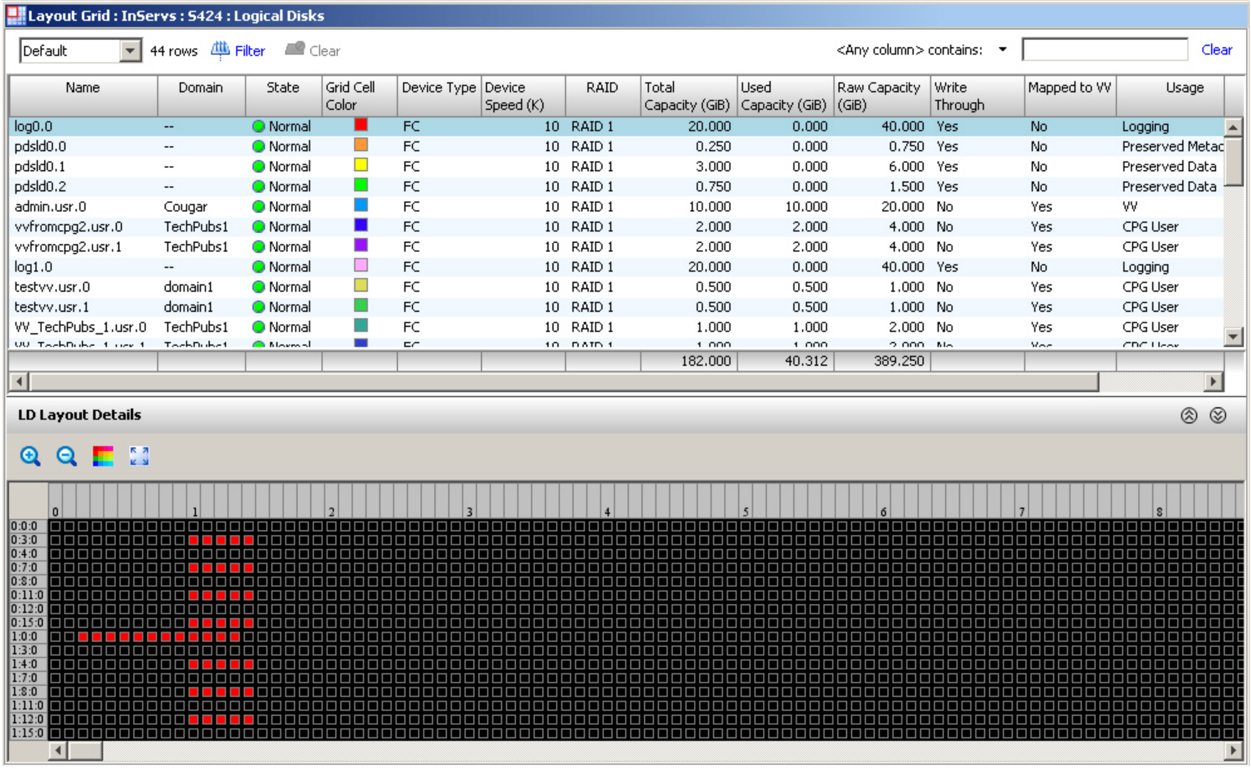
Note: Logical disk information only appears if you have set your preferences in the InForm Management Console to display logical disk information. See Setting Global Preferences.

The logical disks layout screen allows you to see how chunklets are used by the logical disks in the system. The logical disks layout screen is split into an upper pane, which shows a summary of logical disks in the system, and a lower pane, which shows the chunklet layout details for a selected logical disk from the upper pane.

To view the logical disks layout screen:

1. In the Manager Pane, click **Layout Grid**.
2. In the Management Tree, click **Logical Disks** under the system you wish to view.

The logical disks layout screen appears as follows:



Name	Domain	State	Grid Cell Color	Device Type	Device Speed (K)	RAID	Total Capacity (GiB)	Used Capacity (GiB)	Raw Capacity (GiB)	Write Through	Mapped to VV	Usage
log0.0	--	● Normal	🟥	FC	10	RAID 1	20.000	0.000	40.000	Yes	No	Logging
pdsld0.0	--	● Normal	🟧	FC	10	RAID 1	0.250	0.000	0.750	Yes	No	Preserved Metac
pdsld0.1	--	● Normal	🟨	FC	10	RAID 1	3.000	0.000	6.000	Yes	No	Preserved Data
pdsld0.2	--	● Normal	🟩	FC	10	RAID 1	0.750	0.000	1.500	Yes	No	Preserved Data
admin.usr.0	Cougar	● Normal	🟦	FC	10	RAID 1	10.000	10.000	20.000	No	Yes	VV
vvfromcpg2.usr.0	TechPubs1	● Normal	🟦	FC	10	RAID 1	2.000	2.000	4.000	No	Yes	CPG User
vvfromcpg2.usr.1	TechPubs1	● Normal	🟪	FC	10	RAID 1	2.000	2.000	4.000	No	Yes	CPG User
log1.0	--	● Normal	🟪	FC	10	RAID 1	20.000	0.000	40.000	Yes	No	Logging
testvv.usr.0	domain1	● Normal	🟨	FC	10	RAID 1	0.500	0.500	1.000	No	Yes	CPG User
testvv.usr.1	domain1	● Normal	🟩	FC	10	RAID 1	0.500	0.500	1.000	No	Yes	CPG User
VV_TechPubs_1.usr.0	TechPubs1	● Normal	🟩	FC	10	RAID 1	1.000	1.000	2.000	No	Yes	CPG User
							182.000	40.312	389.250			

See also:

Manager Pane

Management Tree

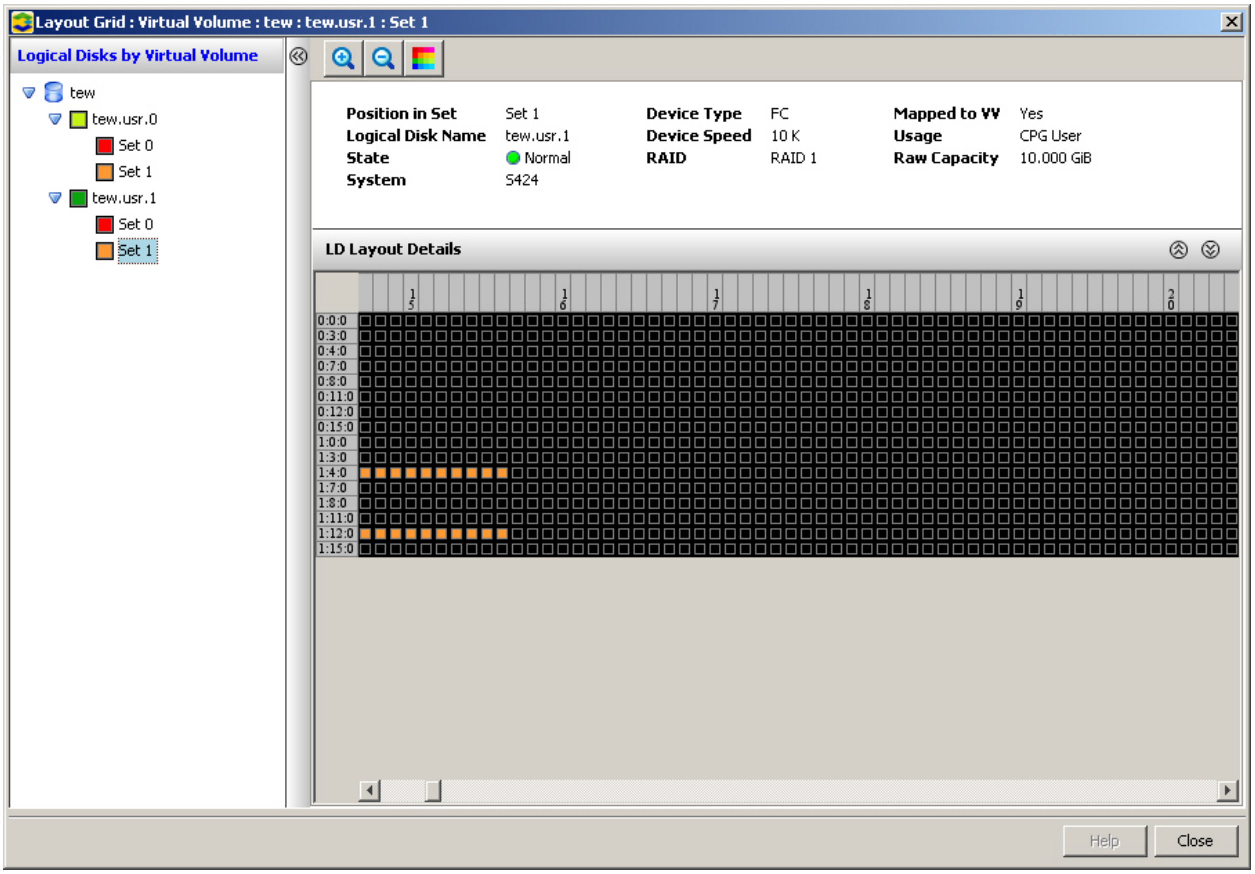
Viewing the By Logical Disk Screen

To view logical disk usage for virtual volumes and Common Provisioning Groups (CPGs), access the By Logical Disk screen.

1. In the Manager Pane, click **Layout Grid**.
2. In the Management Tree, click **Virtual Volumes** or **CPGs** under the system you wish to view.
3. In the virtual volumes layout screen or CPGs layout screen, select a virtual volume or a CPG.
4. In the Main Toolbar, click **By Logical Disks**.

The **By Logical Disks** screen for the selected object appears as follows:

Note: The following figures display the **By Logical Disk** screen for a virtual volume. The layout of the **By Logical Disks** screen is similar for virtual volumes and CPGs.

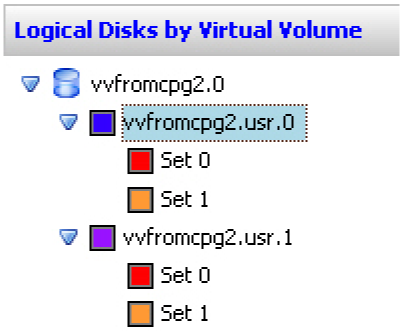

Layout Grid : Virtual Volume : tew : tew.usr.1 : Set 1
Logical Disks by Virtual Volume
tew
tew.usr.0
Set 0
Set 1
tew.usr.1
Set 0
Set 1
LD Layout Details
15
16
17
18
19
20
0:0:0
0:3:0
0:4:0
0:7:0
0:8:0
0:11:0
0:12:0
0:15:0
1:0:0
1:3:0
1:4:0
1:7:0
1:8:0
1:11:0
1:12:0
1:15:0
Help
Close

Position in Set: Set 1
Logical Disk Name: tew.usr.1
State: ● Normal
System: S424
Device Type: FC
Device Speed: 10 K
RAID: RAID 1
Mapped to VV: Yes
Usage: CPG User
Raw Capacity: 10.000 GiB

There are three elements of the **By Logical Disks** screen, a navigation tree, a summary pane, and a logical disk layout pane.

Navigation Tree

The navigation tree appears on the left side of the screen. At the top level is the selected volume or CPG. Below the volume are logical disks. Below logical disks are the position in set.



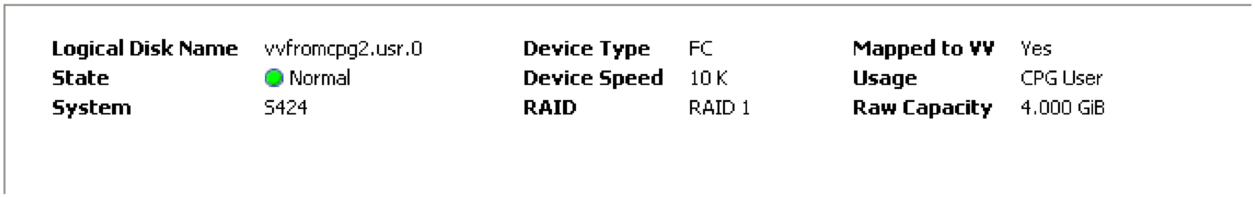
Logical Disks by Virtual Volume

- vvfromcpg2.0
  - vvfromcpg2.usr.0
    - Set 0
    - Set 1
  - vvfromcpg2.usr.1
    - Set 0
    - Set 1

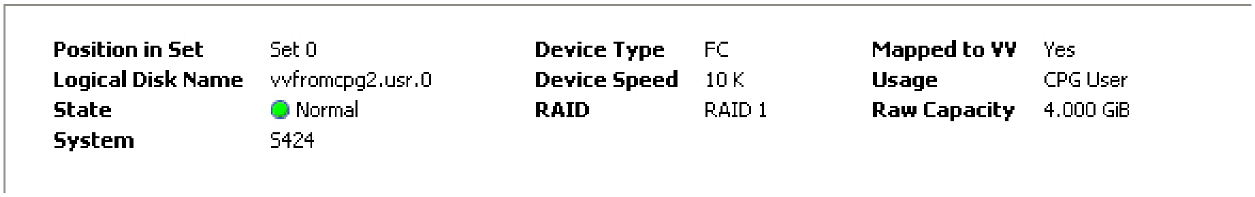
Summary Pane

Note: The summary pane only appears for logical disks and sets selected from the navigation tree.

The summary pane displays information about the selected logical disk or set from the navigation tree.



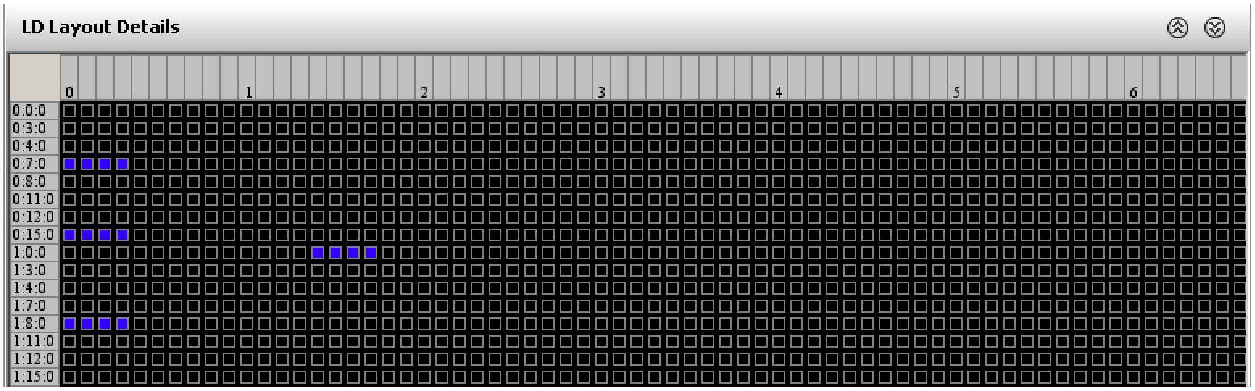
Logical Disk Name	vvfromcpg2.usr.0	**Device Type**	FC	**Mapped to VV**	Yes
State	● Normal	**Device Speed**	10 K	**Usage**	CPG User
System	S424	**RAID**	RAID 1	**Raw Capacity**	4.000 GiB



Position in Set	Set 0	**Device Type**	FC	**Mapped to VV**	Yes
Logical Disk Name	vvfromcpg2.usr.0	**Device Speed**	10 K	**Usage**	CPG User
State	● Normal	**RAID**	RAID 1	**Raw Capacity**	4.000 GiB
System	S424				

Logical Disk Layout Pane

The logical disk layout pane displays details about how chunklets are laid out in the selected logical disk or set.


LD Layout Details
0
1
2
3
4
5
6
0:0:0
0:3:0
0:4:0
0:7:0
0:8:0
0:11:0
0:12:0
0:15:0
1:0:0
1:3:0
1:4:0
1:7:0
1:8:0
1:11:0
1:12:0
1:15:0

Working with the Remote Copy Manager

The Remote Copy Manager of the InForm Management Console allows you to create and manage 3PAR Remote Copy configurations on your InServ Storage Servers. The following topics are discussed:

- Viewing Remote Copy Information
- Configuring Remote Copy
- Working with Remote Copy Groups
- Working with Remote Copy Links
- Working with Remote Copy Targets
- Remote Copy Disaster Recovery

Note: 3PAR Remote Copy requires a 3PAR Remote Copy license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

Note: Working with 3PAR Remote Copy requires that all systems are connected.

Viewing Remote Copy Information

The InForm Management Console allows you to view information about connected systems using 3PAR Remote Copy. Use the InForm Management Console to view the following:

- Available Remote Copy Systems
- Remote Copy System Ports
- Configured Remote Copy Systems
- Remote Copy Groups
- Remote Copy Virtual Volumes
- Remote Copy Links
- Remote Copy Targets

Note: 3PAR Remote Copy requires a 3PAR Remote Copy license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

Viewing Available Remote Copy Systems

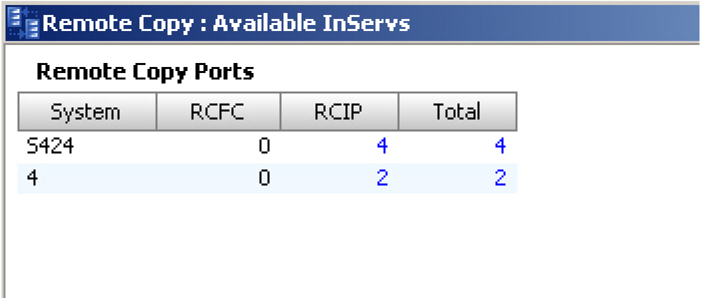
Remote Copy-ready systems are displayed under the **Available InServs** node in the Management Tree.

> **Note:** A Remote Copy-ready system means that the system has a Remote Copy license, and has Remote Copy over Fibre Channel (RCFC) or Remote Copy over IP (RCIP) ports, but has not yet set up Remote Copy.

To view available Remote Copy systems:

1. In the Manager Pane, click **Remote Copy**.
2. In the Management Tree, click **Available InServs**.

The **Available InServs** screen appears as follows in the Management Window:



Remote Copy : Available InServs

Remote Copy Ports

System	RCFC	RCIP	Total
S424	0	4	4
4	0	2	2

The **Available InServs** screen displays systems with available Remote Copy over Fibre Channel and/or Remote Copy over IP ports. Each numeric value displayed in blue under the **RCFC**, **RCIP**, and **Total** columns is a link to that system's Remote Copy port information.

See also:

- Manager Pane
- Management Tree
- Viewing Remote Copy System Ports

Viewing Remote Copy System Ports

To view a system's available Remote Copy ports:

➜Access the **Available InServs** screen and then click the numeric value under the **RCFC**, **RCIP**, or **Total** column.

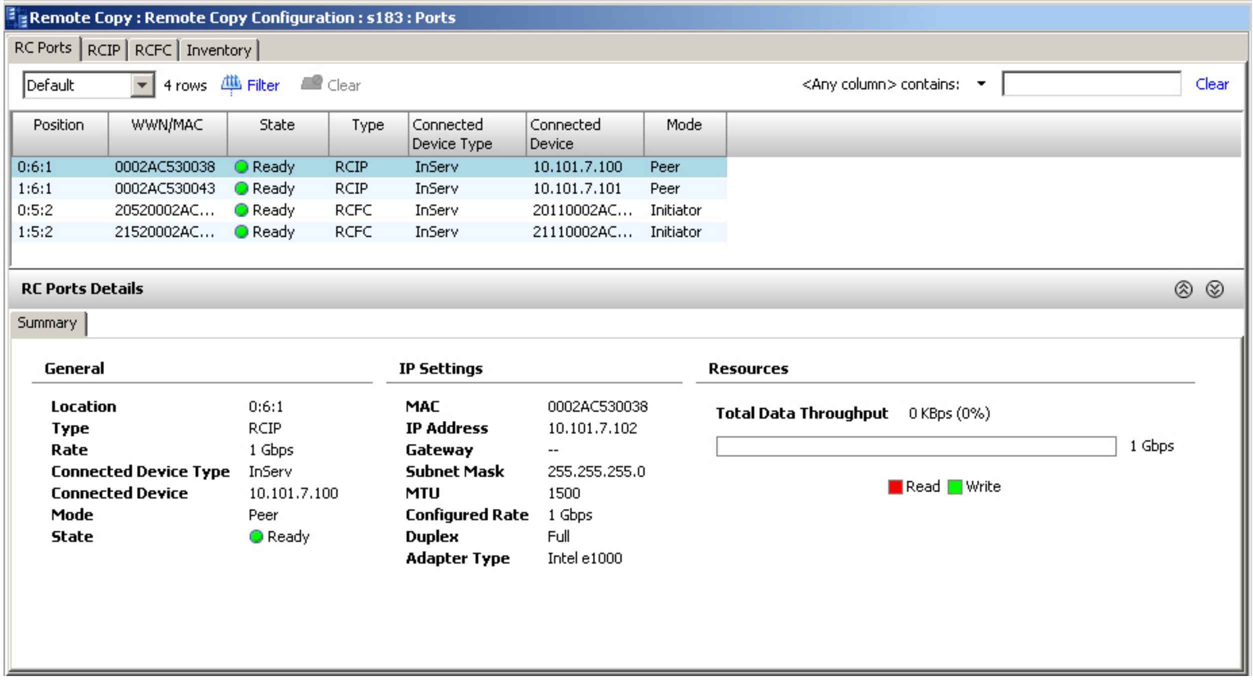
or

1. In the Manager Pane, click **Remote Copy**.
2. In the Management Tree, under **Available InServs**, click the **Ports** node under the system whose Remote Copy ports you wish to view.

Information about a system's Remote Copy ports is displayed on four tabs, **RC Ports**, **RCIP**, **RCFC**, and **Inventory**.

RC Ports Tab

The **RC Ports** tab displays a summary of all Remote Copy ports on a system.


Remote Copy : Remote Copy Configuration : s183 : Ports
RC Ports
RCIP
RCFC
Inventory
Default
4 rows
Filter
Clear
<Any column> contains:
Clear
RC Ports Details
Summary
Read
Write

Position	WWN/MAC	State	Type	Connected Device Type	Connected Device	Mode
0:6:1	0002AC530038	● Ready	RCIP	InServ	10.101.7.100	Peer
1:6:1	0002AC530043	● Ready	RCIP	InServ	10.101.7.101	Peer
0:5:2	20520002AC...	● Ready	RCFC	InServ	20110002AC...	Initiator
1:5:2	21520002AC...	● Ready	RCFC	InServ	21110002AC...	Initiator

General

Location	0:6:1
Type	RCIP
Rate	1 Gbps
Connected Device Type	InServ
Connected Device	10.101.7.100
Mode	Peer
State	● Ready

IP Settings

MAC	0002AC530038
IP Address	10.101.7.102
Gateway	--
Subnet Mask	255.255.255.0
MTU	1500
Configured Rate	1 Gbps
Duplex	Full
Adapter Type	Intel e1000

Resources

Total Data Throughput 0 KBps (0%)

1 Gbps

The upper pane of the **RC Ports** tab displays summary information about the system's Remote Copy ports. The lower pane displays details about a selected port from the upper pane.

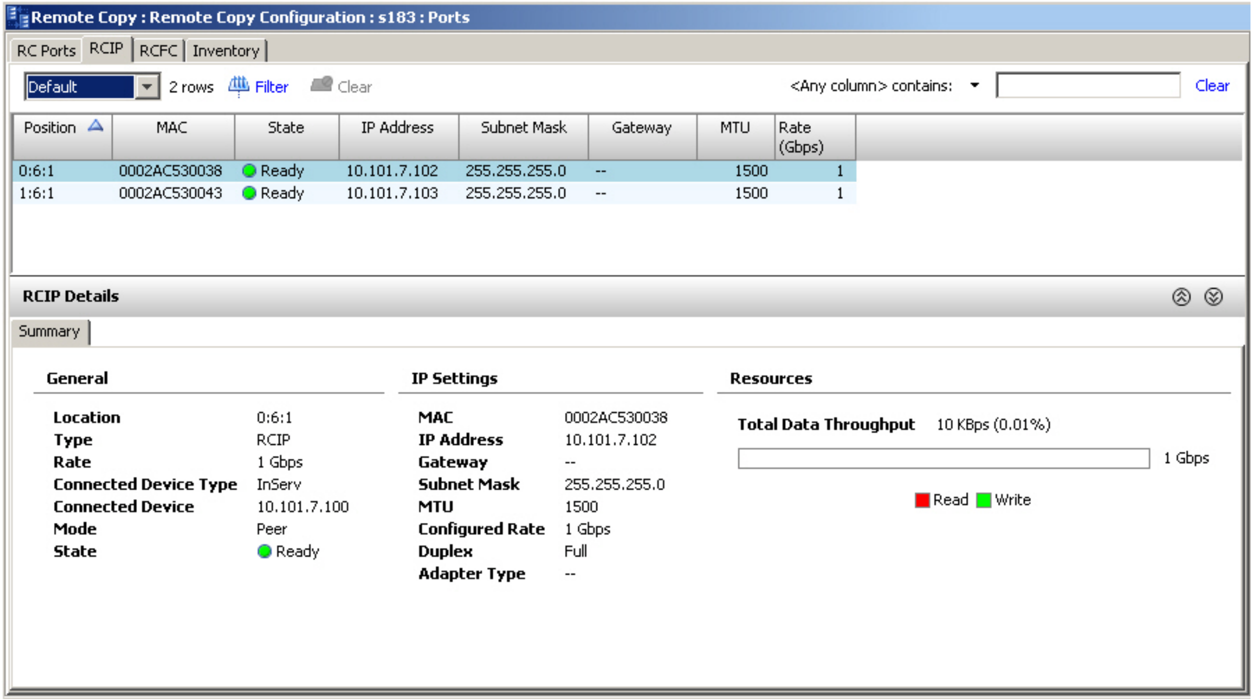
The following information is displayed in the upper pane:

Column	Description
Position	The location of the port in node:slot:port format.
WWN/MAC	The World Wide Name (WWN) or Media Access Control (MAC) address of the connected device.
State	The state of the port. See System and Component Status Icons.
Type	The type of port, either Remote Copy over IP (**RCIP**) or Remote Copy over Fibre Channel (**RCFC**).
Connected Device Type	Type of device that the port is connected to. **Free**, **Disk**, **Host**, or **InServ**.
Connected Device	Name of device that the port is connected to, e.g. host1, cage0.
Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.

For information about the lower pane, see RCIP_Tab and RCFC_Tab.

RCIP Tab

The **RCIP** tab displays a summary of all Remote Copy over IP (RCIP) ports on a system.



Position	MAC	State	IP Address	Subnet Mask	Gateway	MTU	Rate (Gbps)
0:6:1	0002AC530038	● Ready	10.101.7.102	255.255.255.0	--	1500	1
1:6:1	0002AC530043	● Ready	10.101.7.103	255.255.255.0	--	1500	1

General

Location	0:6:1
Type	RCIP
Rate	1 Gbps
Connected Device Type	InServ
Connected Device	10.101.7.100
Mode	Peer
State	● Ready

IP Settings

MAC	0002AC530038
IP Address	10.101.7.102
Gateway	--
Subnet Mask	255.255.255.0
MTU	1500
Configured Rate	1 Gbps
Duplex	Full
Adapter Type	--

Resources

Total Data Throughput 10 KBps (0.01%)

1 Gbps

🟥 Read 🟩 Write

The upper pane of the **RCIP** tab displays summary information about the system's RCIP ports. The lower pane displays details about a selected RCIP port from the upper pane.

The following information is displayed in the upper pane:

Column	Description
Position	The location of the port in node:slot:port format.
MAC	The Media Access Control (MAC) address of the connected device.
State	The state of the port. See System and Component Status Icons.
IP Address	IP address of the RCIP port.
Subnet Mask	Netmask address for the RCIP interface.
Gateway	The address of a local IP router on the same network as the InServ, used to forward traffic to destinations beyond the local network.
MTU	Maximum Transmission Unit. The greatest amount of data or "packet" size that can be transferred in one physical frame on a network. MTU setting for

	the iSCSI port. The default setting is 1500. When supported by the network, an MTU value of 9000 should be used.
Rate	Rate that data can be transferred over the port (**1 Gbps, 2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.

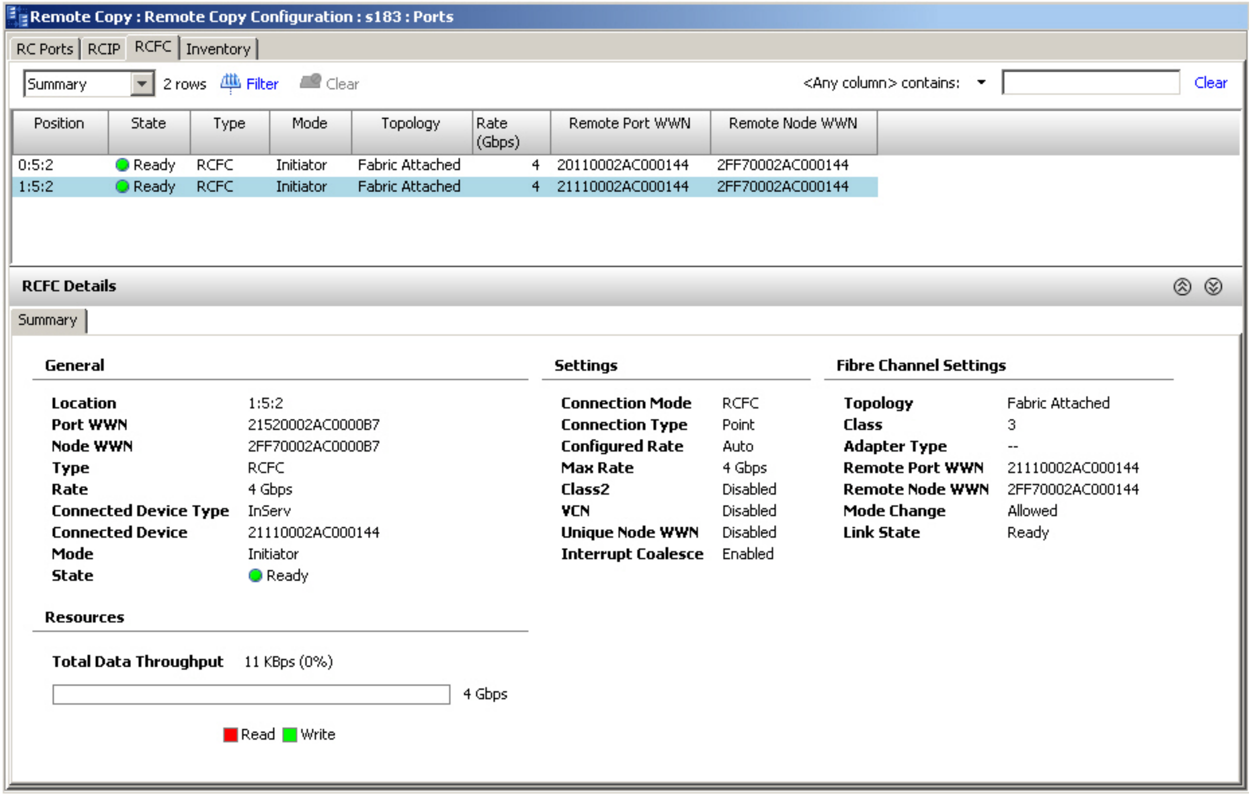
The following information is displayed in the lower pane:

Group	Field	Description
General	**Location**	Port location.
	Type	Indicates whether the port is **FC**, **iSCSI**, **RCIP**, or **RCFC**.
	Rate	Rate that data can be transferred over the port (**1 Gbps, 2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.
	Connected Device Type	Type of device that the port is connected to. **Free**, **Disk**, **Host**, or **InServ**.
	Connected Device	Name of device that the port is connected to, e.g. host1, cage0.
	Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.
	State	Current state of the port.
IP Settings	**MAC**	The Media Access Control address for the Ethernet interface.
	IP Address	IP address of the RCIP port.
	Gateway	The address of a local IP router on the same network as the InServ, used to forward traffic to destinations beyond the local network.
	Subnet Mask	Netmask address for the RCIP interface.

	MTU	Maximum Transmission Unit. The greatest amount of data or "packet" size that can be transferred in one physical frame on a network. MTU setting for the iSCSI port. The default setting is 1500. When supported by the network, an MTU value of 9000 should be used.
	Configured Rate	The duplex speed, **Half** or **Full**.
	Duplex	Model of the adapter that contains the port (for example, **Intel PRO/1000MT**).
	Adapter Type	The TCP port number used by the iSCSI or RCIP card.
Resources	**Total Data Throughput**	The throughput in KIB/sec.

RCFC Tab

The **RCFC** tab displays a summary of all Remote Copy over Fibre Channel (RCFC) ports on a system.



Position	State	Type	Mode	Topology	Rate (Gbps)	Remote Port WWN	Remote Node WWN
0:5:2	● Ready	RCFC	Initiator	Fabric Attached	4	20110002AC000144	2FF70002AC000144
1:5:2	● Ready	RCFC	Initiator	Fabric Attached	4	21110002AC000144	2FF70002AC000144

General

Location	1:5:2
Port WWN	21520002AC0000B7
Node WWN	2FF70002AC0000B7
Type	RCFC
Rate	4 Gbps
Connected Device Type	InServ
Connected Device	21110002AC000144
Mode	Initiator
State	● Ready

Settings

Connection Mode	RCFC
Connection Type	Point
Configured Rate	Auto
Max Rate	4 Gbps
Class2	Disabled
VCN	Disabled
Unique Node WWN	Disabled
Interrupt Coalesce	Enabled

Fibre Channel Settings

Topology	Fabric Attached
Class	3
Adapter Type	--
Remote Port WWN	21110002AC000144
Remote Node WWN	2FF70002AC000144
Mode Change	Allowed
Link State	Ready

Resources

Total Data Throughput 11 KBps (0%)

4 Gbps

🟥 Read 🟩 Write

The upper pane of the **RCFC** tab displays summary information about the system's RCFC ports. The lower pane displays details about a selected RCFC port from the upper pane.

The following information is displayed in the upper pane:

Column	Description
Position	The port location in node:slot:port format.
State	The state of the port. See System and Component Status Icons.
Type	Indicates whether the port is **FC**, **iSCSI**, **RCIP**, or **RCFC**.
Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.
Topology	Type of connection (**Private Loop**, **Public Loop**, or **Point-Point**).
Rate	Rate that data can be transferred over the port (**1 Gbps**, **2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.
Remote Port WWN	World Wide Name of the remote port.
Remote Node WWN	World Wide Name of the remote node.

The following information is displayed in the lower pane:

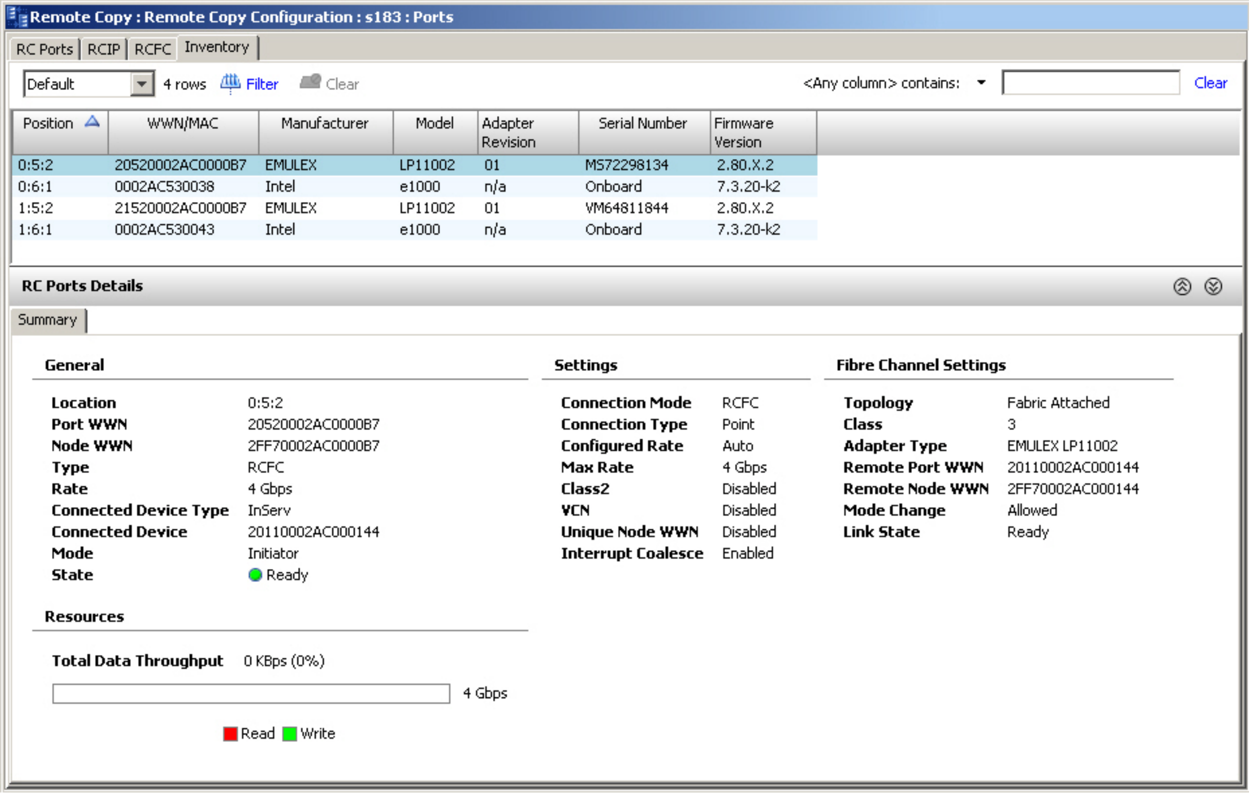
Group	Field	Description
General	**Location**	Port location.
	Port WWN	Port World Wide Name.
	Node WWN	Node World Wide Name.
	Type	Indicates whether the port is **FC**, **iSCSI**, **RCIP**, or **RCFC**.
	Rate	Rate that data can be transferred over the port (**1 Gbps**, **2 Gbps** or **4 Gbps**). When there is no specified value, no connection exists.
	Connected Device Type	Type of device that the port is connected to. **Free**, **Disk**, **Host**, or **InServ**.
	Connected Device	Name of device that the port is connected to, e.g. host1, cage0.

	Mode	Port firmware mode setting. Ports in **Initiator** mode are connected to drive cages and ports in **Target** mode export to hosts. **Suspended** mode is for target ports that have not yet been initialized by the system (rare). **Peer** mode is for Ethernet ports.
	State	Current state of the port.
Resources	**Total Data Throughput**	The throughput in KIB/sec.
Settings	**Connection Mode**	The type of port connection.
	Connection Type	Connection type or port connection setting (**Loop**, **Point**, or **Loop-point**). When the port is set to **Loop-point**, both loop and point-to-point connections are enabled.
	Configured Rate	Data transfer rate setting (for example, **1 Gbps**). **Auto** indicates that the system automatically selects the rate.
	Max Rate	Maximum rate of connection from the port.
	Class 2	Indicates whether Fibre Channel service Class 2 is **Disabled**, **Ack 1** or **Ack 0**.
	VCN	For fabric attached ports, indicates the *VLUN change notification* setting. When set to **Enabled**, notices are generated and sent to the fabric controller. When set to **Disabled**, no notification is sent.
	Unique Node WWN	Indicates whether the node's WWN is **Enabled** or **Disabled**.
	Interrupt Coalesce	If **Disabled**, each I/O generates a separate interrupt to the HBA port driver rather than generating one interrupt for multiple I/O completion.
Fibre Channel Settings	**Topology**	Type of connection (**Private Loop**, **Public Loop**, or **Point-Point**).
	Class	Identifies which Fibre Channel classes of service are enabled (**2**, **3**, or **2/3**). **2/3** indicates that both Class 2 and Class 3 are enabled.

	Adaptor Type	Model of the Fibre Channel adapter that contains the port (for example, **QLOGIC 2302**).
	Remote Port WWN	World Wide Name of the remote port.
	Remote Node WWN	World Wide Name of the remote node.
	Mode Change	Indicates whether port mode change from initiator to target or vice versa is **Allowed** or **Prohibited**. This setting is configured using the InForm CLI command **controlport**.
	Link State	The state of the link.

Inventory Tab

The **Inventory** tab displays information about the Remote Copy ports on a system such as the ports' manufacturer and firmware version. The upper pane of the **Inventory** tab displays summary information about the system's RCFC and RCIP ports. The lower pane displays details about a selected RCFC or RCIP port from the upper pane. For information about the lower pane, see RCIP_Tab and RCFC_Tab.



Position	WWN/MAC	Manufacturer	Model	Adapter Revision	Serial Number	Firmware Version
0:5:2	20520002AC0000B7	EMULEX	LP11002	01	MS72298134	2.80.X.2
0:6:1	0002AC530038	Intel	e1000	n/a	Onboard	7.3.20-k2
1:5:2	21520002AC0000B7	EMULEX	LP11002	01	VM64811844	2.80.X.2
1:6:1	0002AC530043	Intel	e1000	n/a	Onboard	7.3.20-k2

General

Location	0:5:2
Port WWN	20520002AC0000B7
Node WWN	2FF70002AC0000B7
Type	RCFC
Rate	4 Gbps
Connected Device Type	InServ
Connected Device	20110002AC000144
Mode	Initiator
State	● Ready

Resources

Total Data Throughput 0 KBps (0%)

4 Gbps

🟥 Read 🟩 Write

Settings

Connection Mode	RCFC
Connection Type	Point
Configured Rate	Auto
Max Rate	4 Gbps
Class2	Disabled
VCN	Disabled
Unique Node WWN	Disabled
Interrupt Coalesce	Enabled

Fibre Channel Settings

Topology	Fabric Attached
Class	3
Adapter Type	EMULEX LP11002
Remote Port WWN	20110002AC000144
Remote Node WWN	2FF70002AC000144
Mode Change	Allowed
Link State	Ready

See also:

- Manager Pane
- Management Tree
- Viewing Remote Copy Links
- Viewing Remote Copy Targets

Viewing Configured Remote Copy Systems

To view configured Remote Copy systems:

1. In the Manager Pane, click **Remote Copy**.
2. In the Management Tree, click **Remote Copy Configuration** node for the Remote Copy configuration you wish to view.

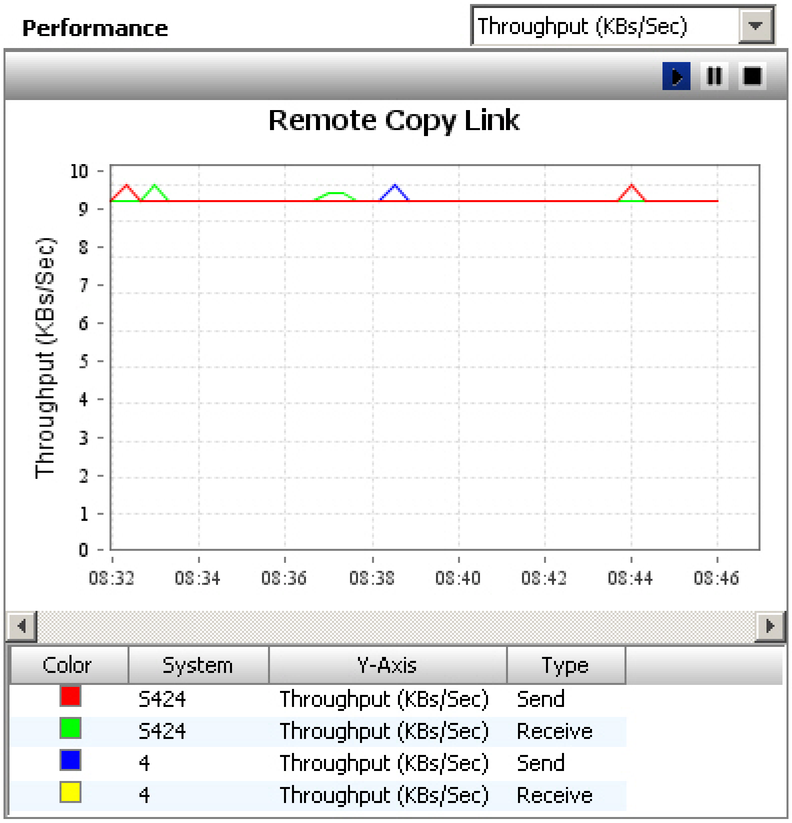
Information about the selected configured Remote Copy systems appears on three tabs, **Summary**, **Tasks**, and **Alerts**, in the Management Window.

Summary Tab

The **Summary** tab is divided into a left pane and right pane. The left pane presents a graphical representation of Remote Copy setup between the systems. The right pane displays the health of each system in the Remote Copy setup, any new alerts, running tasks, a summary of the Remote Copy groups, and a Remote Copy Link performance chart.

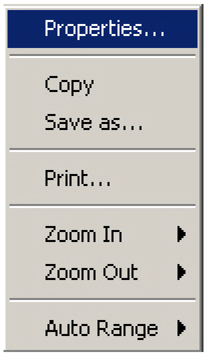
Remote Copy Link Performance Chart

The Remote Copy Link performance chart can be set to graph the thoughput (KIBs/Sec) or heartbeat (round trip in ms). The graph's legend is displayed in tabular format. Clicking any of the rows in the legend results in that row's line becoming bold in the graph. Like other charts in the InForm Management Console, you can customize the colors displayed in the graph by clicking a color in the **Color** column and then selecting a new color from the color palette that appears. At any time, you can play, pause, or stop the graph. Clicking pause or stop causes data plotting to stop; however, data collection continues in the background.



Color	System	Y-Axis	Type
🟥	S424	Throughput (KBs/Sec)	Send
🟩	S424	Throughput (KBs/Sec)	Receive
🟦	4	Throughput (KBs/Sec)	Send
🟨	4	Throughput (KBs/Sec)	Receive

Right-clicking the graph displays a menu, which allows you to perform actions such as viewing and setting the chart's properties, copying the chart, and saving the chart.



Tasks Tab

The **Tasks** tab is divided into an upper pane and lower pane. The upper pane displays a summary of all Remote Copy tasks for the Remote Copy systems. The lower pane displays details about a selected system from the upper pane. The format is similar to the format described in Displaying Tasks.

Alerts Tab

The **Alerts** tab is divided into an upper and lower pane. The upper pane displays all Remote Copy-related alerts. The lower pane displays the details about an alert selected from the upper pane. The format is similar to the format described in Viewing System Alerts.

See also:

- Manager Pane
- Management Tree
- Viewing Remote Copy Links
- Displaying Tasks
- Viewing System Alerts

Viewing Remote Copy Groups

A Remote Copy group is a group of virtual volumes on the same storage server that are logically related, and on which Remote Copy operations are performed.

To view Remote Copy groups:

1. In the Manager Pane, click **Remote Copy**.
2. In the Management Tree, click **Groups** under the **Remote Copy Configuration** node for the Remote Copy configuration you wish to view.

Information about Remote Copy groups appears on three panes in the Management Window:

- The left pane displays a graphical representation of the selected Remote Copy configuration. The image includes the type of Remote Copy relationship (Remote Copy over IP or Remote Copy over Fibre Channel) between the servers in the Remote Copy configuration, the direction of replication (indicated with an arrow) between the servers, the synchronization and Remote Copy status of the Remote Copy groups, and the number of volumes being replicated. This image is updated for the Remote Copy group selected from the upper right pane.
- The upper right pane displays a table of the Remote Copy groups in the selected Remote Copy configuration.
- The lower right pane displays a table of the virtual volume(s) belonging to the selected Remote Copy group from the upper right pane. The table can be filtered to display information about virtual volume Pairs, the Source virtual volume, or the Backup virtual volume.

Note: You can additionally view only synchronous Remote Copy groups or asynchronous periodic Remote Copy groups by clicking either **Synchronous** or **Periodic**, respectively, under the **Groups** node in the Management Tree.

See also:

Manager Pane

Management Tree

Viewing Configured Remote Copy Systems

Viewing Remote Copy Virtual Volumes

To view Remote Copy virtual volumes:

1. In the Manager Pane, click **Remote Copy**.
2. In the Management Tree, click **Virtual Volumes** under the **Remote Copy Configuration** node for the Remote Copy volumes you wish to view.

Information about Remote Copy virtual volumes appears on two panes in the Management Window:

- All virtual volumes associated with the Remote Copy configuration you selected are displayed in a table in the upper pane of the Management Window. The table displays Remote Copy information such as where the volumes are exported, the volume's Remote Copy status (if the volume is a primary or secondary volume), and to which Remote Copy group the volume belongs.
- The lower pane displays details about a single volume selected from the upper pane. The detailed information is displayed on eight tabs, **Summary**, **Settings**, **Advanced**, **Logical Disks**, **SCSI Reservations**, **VLUNs**, **Layout**, and **Alerts**. See Viewing the Virtual Volumes Tab.

See also:

Manager Pane

Management Tree

Viewing Configured Remote Copy Systems

Viewing the Virtual Volumes Tab

Viewing Remote Copy Links

Remote Copy links are associated with Remote Copy target definitions, and are used to transmit and receive data between Remote Copy systems.

To view Remote Copy links:

1. In the Manager Pane, click **Remote Copy**.
2. In the Management Tree, click **Links** under the **Remote Copy Configuration** node for the Remote Copy links you wish to view.

Information about the Remote Copy links appears on two panes in the Management Window:

- The left pane displays a graphical representation of the selected Remote Copy configuration. The image includes the type of Remote Copy relationship (Remote Copy over IP or Remote Copy over Fibre Channel) between the servers in the Remote Copy configuration, the number of links between the Remote Copy systems, and the current state of the links (whether the links are up or down).

You can optionally view the systems' physical connectivity by selecting the **View Physical Connectivity** checKiBox at the lower left side of the pane. When selected, the image displays the Remote Copy systems' port locations, the link IP addresses, and how the ports are connected.

- The right pane displays information about the Remote Copy links for each Remote Copy system in tabular format. Transmitting links are displayed as the target system's name under the **Targets** column. Receiving links are displayed as **receive** under the **Targets** column. Additional information includes each link's port location, IP address, and status.

See also:

Manager Pane

Management Tree

Viewing Configured Remote Copy Systems

Viewing Remote Copy Targets

Remote Copy target definitions are descriptors on one Remote Copy system that identify another a Remote Copy system. In a Remote Copy server pair, the servers are each defined as targets, relative to each other, for Remote Copy operations.

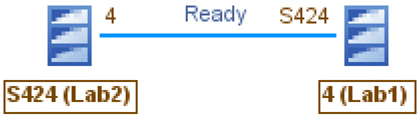
To view Remote Copy targets:

1. In the Manager Pane, click **Remote Copy**.
2. In the Management Tree, click **Targets** under the **Remote Copy Configuration** node for the Remote Copy targets you wish to view.

Information about the Remote Copy targets appears on two panes in the Management Window:

- The left pane displays a graphical representation of the selected Remote Copy configuration. The image includes the type of Remote Copy relationship (Remote Copy over IP or Remote Copy over Fibre Channel) between the servers in the Remote Copy configuration, the names of the Remote Copy systems, and the current state of the targets.

  You can optionally view the systems' target labels by selecting the **Show Target Labels** checKiBox at the lower left side of the pane. When selected, the image displays the Remote Copy systems' target labels adjacent to the InServ Storage Server graphic representing each system. For example, in the following image, the target of the InServ Storage Server labeled **S424 (Lab2)** is **4 (Lab1)**:



- The right pane displays information about the Remote Copy targets for each Remote Copy system in tabular format. Information displayed for each system's targets includes the target's name, target ID, connection type, status, backup system information, and active policy.

See also:

Manager Pane

Management Tree

Viewing Configured Remote Copy Systems

Configuring Remote Copy

The InForm Management Console allows you to setup several different configurations of 3PAR Remote Copy, as well as configure Remote Copy ports. The following types of Remote Copy are supported:

- *1-to-1 Remote Copy* - In 1-to-1 Remote Copy, data is mirrored between two InServ Storage Servers.
- *1-to-N Remote Copy* - In 1-to-N Remote Copy, a single InServ Storage Server uses multiple InServ Storage Servers as backup servers.
- *N-to-1 Remote Copy* - In an N-to-1 Remote Copy relationship, a maximum of four primary (source) InServ Storage Servers use the same InServ Storage Server as backup server.
- *Synchronous Long Distance Remote Copy* - In a Synchronous Long Distance Remote Copy configuration, a single Remote Copy group is copied directly to volumes on two other InServ Storage Servers by admitting the volumes to groups with two targets. One copy is in synchronous Remote Copy mode, the other copy is in asynchronous periodic Remote Copy mode.

Use the Remote Copy configuration best suited to your needs. For setup information, refer to the following topics:

Configuring Remote Copy Ports

Configuring 1-to-1 Remote Copy

Configuring 1-to-N Remote Copy

Configuring N-to-1 Remote Copy

Configuring Synchronous Long Distance Remote Copy

Pinging Remote Copy Links

Note: 3PAR Remote Copy requires a 3PAR Remote Copy license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

Configuring Remote Copy Ports

To configure a Remote Copy over Fibre Channel (RCFC) port or a Remote Copy over IP (RCIP) port:

1. In the Manager Pane, click **Remote Copy**.
2. In the Common Actions Panel, click **Configure RC Port**.

   The **<Port Type> Configuration** wizard appears.

3. Select a system from the **System** list.

   The remaining fields in the wizard change to reflect RCFC or RCIP set up depending on the system selected.

4. Select a port from the **Port** list.
5. The remaining fields are populated with the selected port's information.
6. Follow the directions in Configuring an RCFC Port or Configuring an RCIP Port to edit the port information.
7. Click **OK**.

See also:

Manager Pane

Common Actions Panel

Configuring an RCFC Port

Configuring an RCIP Port

Viewing Remote Copy System Ports

Configuring 1-to-1 Remote Copy

Note: 3PAR Remote Copy requires a 3PAR Remote Copy license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

A 1-to-1 Remote Copy relationship involves two InServ Storage Servers. Depending on how the 1-to-1 Remote Copy relationship is configured, one server can serve as the primary (source) server and the other the backup server (unidirectional), or both servers can serve as both the primary and backup servers (bidirectional).

Note: In order to configure 1-to-1 Remote Copy, you must have two available InServ Storage servers with configured Remote Copy ports.

To configure 1-to-1 Remote Copy:

1. In the Manager Pane, click **Remote Copy**.
2. In the Common Actions panel, click **New Configuration**.

The **New Remote Copy Configuration** wizard appears.

Step 1. Targets

1. Under **Select a Topology**, click **1-1**.
2. Under **Assign Systems**, click a storage server graphic. In the menu that appears, select a storage server to assign. Repeat for the other storage server graphic.

Note: Only available InServ Storage Servers, which satisfy requirements appear. See the *3PAR Remote Copy User's Guide* for additional information.

3. (Optional) Under **Update System's Location**, enter a location for each storage server, e.g. **Lab 1, New York**.
4. (Optional) Under **Name Targets**, the Target Name fields are automatically populated with the storage server names. You can enter an alternate name if you wish.
5. Click **Next**.

Step 2. Links

1. A graphical representation of each system's Remote Copy ports appears under **Create Links**. Click and drag from one port on one system to a port on the other system. Repeat for a second port.
2. For IP links, in the **IP Settings** groups for each system/port, all fields are automatically populated based on the link relationship you established under **Create Links**.
    a. (Optional) Enter the gateway address for each system/port.
    b. (Optional) Click **Apply** to test the link configuration, or **Ping** to test the communication between the links.
3. For Fibre Channel links, in the **Settings** groups for each system/port:
    a. Connection Type - Select **Point** for point-to-point mode or **Loop** for arbitrated loop mode.
    b. Configured Rate - Select **1**, **2**, **4** Gbps, or **Auto (default)**.
    c. Click **Apply** to test the link configuration.
4. Click **Next**.

> **Note:** If Fibre Channel ports are not displayed, the ports may not be zoned correctly, or may not be physically connected. See Configuring Fibre Channel Ports for RCFC for additional information.

Step 3. Groups

1. In the **Source** group:
    a. **System** - Select the system on which the Remote Copy group will reside.
    b. (Optional) **Domain** - Select the domain in which the Remote Copy group will reside.
    c. **Group** - Enter a name for the Remote Copy group.
    d. (Optional) **Start group after completion** - Select if you want the Remote Copy group to be started (start mirroring) after it is created.
    e. (Optional) **Do not perform initial sync** - Select if you do not want the created Remote Copy group to be synchronized with its backup group.
2. In the **Backup** group:
    a. **Name** - The system NOT selected as the source system, automatically appears.
    b. **Mode** - Select **Synchronous** or **Periodic**.
    c. **Sync Period** - If you selected **Periodic**, select **second(s)**, **minute(s)**, **hour(s)**, or **day(s)** and enter a numeric value for when you wish the source and backup groups to synchronize.
3. Click **Add**.
4. (Optional) Repeat steps 1 through 3 to create additional Remote Copy groups.

> **Note:** When creating additional groups, if you select a server other than the server selected during the first instance of group creation, you will create a bidirectional Remote Copy relationship where each storage server will be both the primary and backup servers to the other.

5. Click **Next**.

Step 4. Virtual Volumes

1. Select a Remote Copy group from the **Group** list.
2. Under the **Source Volume on** list, select a virtual volume.
3. Under the **Backup Volume on** list:
    a. Select either **Existing** or **New**.
    b. If you selected **Existing**, select a backup virtual volume.
    c. If you selected **New**:
        i. **Name** - Enter a name for the backup virtual volume.
        ii. **CPG** under **User CPG** - Select a CPG from which the volume's user space is allocated.
        iii. **CPG** under **Copy CPG** - Select a CPG from which the volume's copy space is allocated.
        iv. (Optional) In the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.

Note: When selecting volumes, you can filter the lists to include by clicking the down arrow and selecting **Virtual Volumes**, **Provisioning**, and **Virtual Size**. To clear the filter, click **Clear**.

4. Click **Add**.
5. (Optional) Repeat steps 1 through 4 to add additional virtual volumes to your Remote Copy group(s).
6. Click **Finish**.

See also:

Manager Pane

Common Actions Panel

Viewing Configured Remote Copy Systems

Configuring 1-to-N Remote Copy

Note: 3PAR Remote Copy requires a 3PAR Remote Copy license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

In a 1-to-N Remote Copy relationship, a single primary (source) InServ Storage Server uses multiple InServ Storage Servers as backup servers. 1-to-N Remote Copy configurations can operate in either a combination of unidirectional and bidirectional (for a single Remote Copy group pair), or in complete unidirectional functionality. For the current release, a 1-to-N Remote Copy configuration can have a maximum of two backup servers.

Note: In order to configure 1-to-N Remote Copy, you must have at least two available InServ Storage servers with configured Remote Copy ports.

To configure 1-to-N Remote Copy:

1. In the Manager Pane, click **Remote Copy**.
2. In the Common Actions panel, click **New Configuration**.

The **New Remote Copy Configuration** wizard appears.

Step 1. Targets

1. Under **Select a Topology**, click **1-N**.
2. Under **Assign Systems:**
   a. Select the total number of systems you are configuring for the 1-to-N setup.
   b. Click a storage server graphic. In the menu that appears, select a storage server to assign. Repeat for the other storage server graphics.

Note: Only available InServ Storage Servers,which satisfy requirements appear. See the *3PAR Remote Copy User's Guide* for additional information.

3. (Optional) Under **Update System's Location**, enter a location for each storage server, e.g. **Lab 1, New York**.
4. (Optional) Under **Name Targets**, the **Target Name** fields are automatically populated with the storage server names. You can enter an alternate name if you wish.
5. Click **Next**.

Step 2. Links

1. A graphical representation of each system's Remote Copy ports appears under **Create Links**. Click and drag from one port on one system to a port on the other system. Repeat for the other Remote Copy ports.
2. For IP links, in the **IP Settings** groups for each system/port, all fields are automatically populated based on the link relationship you established under **Create Links**.
   a. (Optional) Enter the gateway address for each system/port.
   b. (Optional) Click **Apply** to test the link configuration, or **Ping** to test the communication between the links.
3. For Fibre Channel links, in the **Settings** groups for each system/port:
   a. Connection Type - Select **Point** for point-to-point mode or **Loop** for arbitrated loop mode.
   b. Configured Rate - Select **1**, **2**, **4** Gbps, or **Auto (default)**.
   c. Click **Apply** to test the link configuration.
4. Click **Next**.

Note: If Fibre Channel ports are not displayed, the ports may not be zoned correctly, or may not be physically connected. See Configuring Fibre Channel Ports for RCFC for additional information.

Step 3. Groups

1. In the **Source** group:
   a. **System** - Select the system on which the Remote Copy group will reside.
   b. (Optional) **Domain** - Select the domain in which the Remote Copy group will reside.
   c. **Group** - Enter a name for the Remote Copy group.
   d. (Optional) **Start group after completion** - Select if you want the Remote Copy group to be started (start mirroring) after it is created.
   e. (Optional) **Do not perform initial sync** - Select if you do not want the created Remote Copy group to be synchronized with its backup group.
2. In the **Backup** group:
   a. **Name** - The system(s) NOT selected as the source system, automatically appears. Select a system.
   b. **Mode** - Select **Synchronous** or **Periodic**.
   c. **Sync Period** - If you selected **Periodic**, select **second(s)**, **minute(s)**, **hour(s)**, or **day(s)** and enter a numeric value for when you wish the source and backup groups to synchronize.
3. Click **Add**.
4. (Optional) Repeat steps 1 through 3 to create additional Remote Copy groups.

Note: When creating additional groups, if you select a server other than the server selected during the first instance of group creation, you will create a bidirectional Remote Copy relationship where each storage server will be both the primary and backup servers to the other. For N-to-1 Remote Copy, you can only create a bidirectional configuration for one Remote Copy group pair.

5. Click **Next**.

Step 4. Virtual Volumes

1. Select a Remote Copy group from the **Group** list.
2. Under the **Source Volume on** list, select a virtual volume.
3. Under the **Backup Volume on** list:
    a. Select either **Existing** or **New**.
    b. If you selected **Existing**, select a backup virtual volume.
    c. If you selected **New**:
        i. **Name** - Enter a name for the backup virtual volume.
        ii. **CPG** under **User CPG** - Select a CPG from which the volume's user space is allocated.
        iii. **CPG** under **Copy CPG** - Select a CPG from which the volume's copy space is allocated.
        iv. (Optional) In the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.

Note: When selecting volumes, you can filter the lists to include by clicking the down arrow and selecting **Virtual Volumes**, **Provisioning**, and **Virtual Size**. To clear the filter, click **Clear**.

4. Click **Add**.
5. (Optional) Repeat steps 1 through 4 to add additional virtual volumes to your Remote Copy group(s).
6. Click **Finish**.

See also:

Manager Pane

Common Actions Panel

Viewing Configured Remote Copy Systems

Configuring N-to-1 Remote Copy

Note: 3PAR Remote Copy requires a 3PAR Remote Copy license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

In an N-to-1 Remote Copy relationship, a maximum of four primary (source) InServ Storage Servers use the same InServ Storage Server as backup server. N-to-1 Remote Copy configurations can operate in either a combination of unidirectional and bidirectional (for a single Remote Copy group pair), or in complete unidirectional functionality.

Note: In order to configure N-to-1 Remote Copy, you must have at least two available InServ Storage servers with configured Remote Copy ports.

To configure N-to-1 Remote Copy:

1. In the Manager Pane, click **Remote Copy**.
2. In the Common Actions panel, click **New Configuration**.

The **New Remote Copy Configuration** wizard appears.

Step 1. Targets

1. Under **Select a Topology**, click **N-1**.
2. Under **Assign Systems:**
   a. Select the total number of systems you are configuring for the N-to-1 setup.
   b. Click a storage server graphic. In the menu that appears, select a storage server to assign. Repeat for the other storage server graphics.

Note: Only available InServ Storage Servers, which satisfy requirements appear. See the *3PAR Remote Copy User's Guide* for additional information.

3. (Optional) Under **Update System's Location**, enter a location for each storage server, e.g. **Lab 1, New York**.
4. (Optional) Under **Name Targets**, the Target Name fields are automatically populated with the storage server names. You can enter an alternate name if you wish.
5. Click **Next**.

Step 2. Links

1. A graphical representation of each system's Remote Copy ports appears under **Create Links**. Click and drag from one port on one system to a port on the other system. Repeat for the other Remote Copy ports.
2. For IP links, in the **IP Settings** groups for each system/port, all fields are automatically populated based on the link relationship you established under **Create Links**.
    a. (Optional) Enter the gateway address for each system/port.
    b. (Optional) Click Apply to test the link configuration, or Ping to test the communication between the links.
3. For Fibre Channel links, in the **Settings** groups for each system/port:
    a. Connection Type - Select **Point** for point-to-point mode or **Loop** for arbitrated loop mode.
    b. Configured Rate - Select **1**, **2**, **4** Gbps, or **Auto (default)**.
    c. Click **Apply** to test the link configuration.
4. Click **Next**.

> **Note:** If Fibre Channel ports are not displayed, the ports may not be zoned correctly, or may not be physically connected. See Configuring Fibre Channel Ports for RCFC for additional information.

Step 3. Groups

1. In the **Source** group:
    a. **System** - Select the system on which the Remote Copy group will reside.
    b. (Optional) **Domain** - Select the domain in which the Remote Copy group will reside.
    c. **Group** - Enter a name for the Remote Copy group.
    d. (Optional) **Start group after completion** - Select if you want the Remote Copy group to be started (start mirroring) after it is created.
    e. (Optional) **Do not perform initial sync** - Select if you do not want the created Remote Copy group to be synchronized with its backup group.
2. In the **Backup** group:
    a. **Name** - The system NOT selected as the source system, automatically appears.
    b. **Mode** - Select **Synchronous** or **Periodic**.
    c. **Sync Period** - If you selected **Periodic**, select **second(s)**, **minute(s)**, **hour(s)**, or **day(s)** and enter a numeric value for when you wish the source and backup groups to synchronize.
3. Click **Add**.
4. (Optional) Repeat steps 1 through 3 to create additional Remote Copy groups.

> **Note:** When creating additional groups, if you select a server other than the server selected during the first instance of group creation, you will create a bidirectional Remote Copy relationship where each storage server will be both the primary and backup servers to the other. For 1-to-N Remote Copy, you can only create a bidirectional configuration for one Remote Copy group pair.

5. Click **Next**.

Step 4. Virtual Volumes

1. Select a Remote Copy group from the **Group** list.
2. Under the **Source Volume on** list, select a virtual volume.
3. Under the **Backup Volume on** list:
    a. Select either **Existing** or **New**.
    b. If you selected **Existing**, select a backup virtual volume.
    c. If you selected **New**:
        i. **Name** - Enter a name for the backup virtual volume.
        ii. **CPG** under **User CPG** - Select a CPG from which the volume's user space is allocated.
        iii. **CPG** under **Copy CPG** - Select a CPG from which the volume's copy space is allocated.
        iv. (Optional) In the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.

Note: When selecting volumes, you can filter the lists to include by clicking the down arrow and selecting **Virtual Volumes**, **Provisioning**, and **Virtual Size**. To clear the filter, click **Clear**.

4. Click **Add**.
5. (Optional) Repeat steps 1 through 4 to add additional virtual volumes to your Remote Copy group(s).
6. Click **Finish**.

See also:

Manager Pane

Common Actions Panel

Viewing Configured Remote Copy Systems

Configuring Synchronous Long Distance Remote Copy

Note: 3PAR Remote Copy requires a 3PAR Remote Copy license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

In a Synchronous Long Distance Remote Copy configuration, a single Remote Copy group is copied directly to volumes on two other InServ Storage Servers by admitting the volumes to groups with two targets. Synchronous mode Remote Copy is used between the primary (source) and backup server that are physically closer to each other where a high bandwidth/low latency connection is shared. Asynchronous periodic (periodic) Remote Copy is used between the primary server and backup server that are physically farther apart sharing a lesser connection. The synchronous connection must be a Fibre Channel connection, while the asynchronous periodic connection can be either all Fibre Channel (over an IP network) or all IP. Only unidirectional functionality is allowed between Remote Copy pairs.

Note: In order to configure Synchronous Long Distance Remote Copy, you must have three available InServ Storage servers with configured Remote Copy ports. At least two of the servers must have Fibre Channel ports.

To configure Synchronous Long Distance Remote Copy:

1. In the Manager Pane, click **Remote Copy**.
2. In the Common Actions panel, click **New Configuration**.

The **New Remote Copy Configuration** wizard appears.

Step 1. Targets

1. Under **Select a Topology**, click **Synchronous Long Distance**.
2. Under **Assign Systems:**
    a. Click a storage server graphic. In the menu that appears, select a storage server to assign. Repeat for the other storage server graphics.

Note: Only available InServ Storage Servers, which satisfy requirements appear. See the *3PAR Remote Copy User's Guide* for additional information.

3. (Optional) Under **Update System's Location**, enter a location for each storage server, e.g. **Lab 1, New York**.

4. (Optional) Under **Name Targets**, the Target Name fields are automatically populated with the storage server names. You can enter an alternate name if you wish.
5. Click **Next**.

Step 2. Links

1. A graphical representation of each system's Remote Copy ports appears under **Create Links**. Click and drag from one port on one system to a port on the other system. Repeat for the other Remote Copy ports.

Note: You must use Fibre Channel links for the servers you plan to configure with synchronous mode Remote Copy.

2. For IP links, in the **IP Settings** groups for each system/port, all fields are automatically populated based on the link relationship you established under **Create Links**.
    a. (Optional) Enter the gateway address for each system/port.
    b. (Optional) Click Apply to test the link configuration, or Ping to test the communication between the links.
3. For Fibre Channel links, in the **Settings** groups for each system/port:
    a. Connection Type - Select **Point** for point-to-point mode or **Loop** for arbitrated loop mode.
    b. Configured Rate - Select **1**, **2**, **4** Gbps, or **Auto (default)**.
    c. Click **Apply** to test the link configuration.
4. Click **Next**.

Note: If Fibre Channel ports are not displayed, the ports may not be zoned correctly, or may not be physically connected. See Configuring Fibre Channel Ports for RCFC for additional information.

Step 3. Groups

1. In the **Source** group:
    a. **System** - Select the system on which the Remote Copy group will reside.
    b. (Optional) **Domain** - Select the domain in which the Remote Copy group will reside.
    c. **Group** - Enter a name for the Remote Copy group.
    d. (Optional) **Start group after completion** - Select if you want the Remote Copy group to be started (start mirroring) after it is created.
    e. (Optional) **Do not perform initial sync** - Select if you do not want the created Remote Copy group to be synchronized with its backup group.
2. In the first **Backup** group:
    a. **Name** - The system NOT selected as the source system, automatically appears.
    b. **Mode** - Select **Synchronous** or **Periodic**.

   c. **Syn Period** - If you selected **Periodic**, select **second(s)**, **minute(s)**, **hour(s)**, or **day(s)** and enter a numeric value for when you wish the source and backup groups to synchronize.
3. In the second **Backup** group:
   a. **Name** - The system NOT selected as the source system, automatically appears.
   b. **Mode** - Select **Synchronous** or **Periodic**.
   c. **Syn Period** - If you selected **Periodic**, select **second(s)**, **minute(s)**, **hour(s)**, or **day(s)** and enter a numeric value for when you wish the source and backup groups to synchronize.

> **Note:** The synchronous connection must be a Fibre Channel connection.

4. Click **Add**.
5. (Optional) Repeat steps 1 through 4 to create additional Remote Copy groups.
6. Click **Next**.

Step 4. Virtual Volumes

1. Select a Remote Copy group from the **Group** list.
2. Under the **Source Volume on** list, select a virtual volume.
3. Under the first **Backup Volume on** list:
   a. Select either **Existing** or **New**.
   b. If you selected **Existing**, select a backup virtual volume.
   c. If you selected **New**:
      i. **Name** - Enter a name for the backup virtual volume.
      ii. **CPG** under **User CPG** - Select a CPG from which the volume's user space is allocated.
      iii. **CPG** under **Copy CPG** - Select a CPG from which the volume's copy space is allocated.
      iv. (Optional) In the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.
4. Under the second **Backup Volume on** list:
   a. Select either **Existing** or **New**.
   b. If you selected **Existing**, select a backup virtual volume.
   c. If you selected **New**:
      i. **Name** - Enter a name for the backup virtual volume.
      ii. **CPG** under **User CPG** - Select a CPG from which the volume's user space is allocated.
      iii. **CPG** under **Copy CPG** - Select a CPG from which the volume's copy space is allocated.
      iv. (Optional) In the **Allocation Warning** and **Allocation Limit** text boxes, enter the appropriate information. If you do not want these options used, uncheck the **Enabled** box.

Note: When selecting volumes, you can filter the lists to include by clicking the down arrow and selecting **Virtual Volumes**, **Provisioning**, and **Virtual Size**. To clear the filter, click **Clear**.

5. Click **Add**.
6. (Optional) Repeat steps 1 through 5 to add additional virtual volumes to your Remote Copy group(s).
7. Click **Finish**.

See also:

Manager Pane

Common Actions Panel

Viewing Configured Remote Copy Systems

Pinging RCIP Links

When creating Remote Copy over IP (RCIP) links, you are provided the opportunity to configure and ping the link ports to verify their validity and communication.

When pinging RCIP link ports:

- You can click **Details** in the **Port Configuration** or **Ping** dialog boxes to show or hide details about the configuration or ping operation, respectively.
- If the MTU value of the ports is different, for example one value 1500 and the other value 9000, the lower packet size (1500) is used during the ping operation.
- If both ports' MTU values are 9000, **Jumbo Ping** is displayed as the **Ping** group box title.

Configuring and Pinging the Remote Copy Links

Clicking **Apply** after entering or changing the requested link information during Remote Copy link creation results in the entered configuration first being tested to check its validity, and then proceeding with the ping operation to check communication between the link ports. The ping is not executed if the configuration fails.

Pinging the Remote Copy Links

Clicking **Ping** after entering or changing the requested link information during Remote Copy link creation results in a ping operation on the entered link ports.

See also:

- Creating Remote Copy Links
- Configuring 1-to-1 Remote Copy
- Configuring 1-to-N Remote Copy
- Configuring N-to-1 Remote Copy
- Configuring Synchronous Long Distance Remote Copy
- Adding to a Remote Copy Configuration

Working with Remote Copy Groups

When you have created a Remote Copy relationship between your InServ Storage Servers, you can add and create new Remote Copy groups, as well as edit and manage existing Remote Copy groups.

- Creating Remote Copy Groups
- Starting Remote Copy Groups
- Stopping Remote Copy Groups
- Editing Remote Copy Groups
- Removing Remote Copy Groups

Creating Remote Copy Groups

To create a Remote Copy group:

1. In the Manager Pane, click **Remote Copy**.
2. In the Management Tree, select the **Remote Copy Configuration** to which you want to add a Remote Copy group.
3. In the Common Actions Panel, click **Create Remote Copy Group**.

   The **Create Remote Copy Group** wizard appears.

4. In the **Source** group:

   a. **System** - Select the primary (source) system on which the Remote Copy group will be created.
   b. (Optional) **Domain** - Select the domain in which the Remote Copy group will reside.
   c. **Group** - Enter a name for the group.
   d. (Optional) **Start group after completion** - Select if you want the Remote Copy group to be started (start mirroring) after it is created.
   e. (Optional) **Do not perform initial sync** - Select if you do not want the created Remote Copy group to be synchronized with its backup group.
5. In the **Backup** group:
   a. **Name** - The system(s) NOT selected as the source system, automatically appears.
   b. **Mode** - Select **Synchronous** or **Periodic**.
   c. (Optional) **Sync Period** - If you selected **Periodic**, select this checKiBox and select **second(s)**, **minute(s)**, **hour(s)**, or **day(s)** and enter a numeric value for when you wish the source and backup groups to synchronize their data. If not selected, no period is used.
6. In the **Source Volume on** list, select a source virtual volume from the virtual volume list.
7. In the **Backup Volume on** list, select a backup virtual volume from the virtual volume list, or click **New** to create a new backup volume.

> **Note:** When selecting volumes, you can filter the lists to include by clicking the down arrow and selecting **Virtual Volumes**, **Provisioning**, and **Virtual Size**. To clear the filter, click **Clear**.

8. If you clicked **New**:
   a. Enter a volume name.
   b. Select CPG for the user space.
   c. Select a CPG for the copy space.
   d. (Optional) If you wish to enter an allocation warning percentage and/or allocation limit, click **Enabled** and enter a value.

> **Note:** If you are creating a Remote Copy group for a Synchronous Long Distance Remote Copy configuration, repeat steps 7 and 8 for the second **Backup Volume on** list of virtual volumes.

9. Click **Add**.
10. Repeat steps 4 through 7 to create additional Remote Copy groups.
11. Click **OK**.

Starting Remote Copy Groups

Starting a stopped Remote Copy group resumes mirroring of the selected group between InServ Storage Servers.

To start a Remote Copy group:

1. Access the Remote Copy Groups screen.
2. In the upper pane, select the stopped group(s) you wish to start.
3. Right-click the selection and click **Start Remote Copy Group(s)**.

   The **Start Remote Copy Group(s)** dialog box appears.

4. (Optional) If you do not wish the source and backup groups to synchronize upon restart, select **Do not perform initial sync**.
5. Click **OK**.

See also:

Viewing Remote Copy Groups

Selecting Multiple Items

Stopping Remote Copy Groups

Stopping a Remote Copy group stops mirroring of the selected group between InServ Storage Servers.

To stop a Remote Copy group:

1. Access the Remote Copy Groups screen.
2. In the upper pane, select the group(s) you wish to stop.
3. Right-click the selection and click **Stop Remote Copy Group(s)**.

   The **Stop Remote Copy Group(s)** dialog box appears.

4. Click **OK**.

See also:

Viewing Remote Copy Groups

Selecting Multiple Items

Synching Remote Copy Groups

To synchronize source and backup Remote Copy groups:

1. Access the Remote Copy Groups screen.
2. In the upper pane, select the group(s) you wish to synchronize.
3. Right-click the selection and select **Sync Remote Copy Group(s)**.

   The **Sync Remote Copy Group(s)** dialog box appears.

4. Click **OK**.

See also:

Viewing Remote Copy Groups

Editing Remote Copy Groups

To edit a Remote Copy group:

1. Access the Remote Copy Groups screen.
2. In the upper pane, right-click the group you wish to edit.
3. Click **Edit Remote Copy Group**.

   The **Edit Remote Copy Group** wizard appears.

Step 1. Groups

1. (Optional) If you wish to display advanced editing options, select **Show advanced options**.
2. In the **Backup** group:
   a. **Mode** - Select **Synchronous** or **Periodic**.
   b. (Optional) **Sync Period** - If you selected **Periodic**, select this checKiBox and then select **second(s)**, **minute(s)**, **hour(s)**, or **day(s)** and enter a numeric value for when you wish the source and backup groups to synchronize their data. If not selected, no period is used.
   c. **Stop group** - Select to stop the Remote Copy group (stop mirroring) for editing.
   d. (Optional) **Start group after completion** - Select if you want the Remote Copy group to be started (start mirroring) after it is created.
   e. (Optional) **Do not perform initial sync** - Select if you do not want the created Remote Copy group to be synchronized with its backup group.
   f. *(Optional) **Auto Recover** - Select if you want the group to be restarted automatically after Remote Copy links come back up should the links go down.

   g. *(Optional) **Over Period Alert** - Select if you want an alert to be generated if the synchronization of a periodic group takes longer than its set synchronization period. This option is not available for groups in synchronous mode.
3. Click **Next**.

*Displayed if **Show advanced options** is selected.

Step 2. Virtual Volumes

1. In the **Source Volume on** list, select a source virtual volume from the virtual volume list.
2. In the **Backup Volume on** list, select a backup virtual volume from the virtual volume list, or click **New** to create a new backup volume.

> **Note:** When selecting volumes, you can filter the lists to include by clicking the down arrow and selecting **Virtual Volumes**, **Provisioning**, and **Virtual Size**. To clear the filter, click **Clear**.

3. If you clicked **New**:
   a. Enter a volume name.
   b. Select CPG for the user space.
   c. Select a CPG for the copy space.
   d. (Optional) If you wish to enter an allocation warning percentage and/or allocation limit, click **Enabled** and enter a value.

> **Note:** If you are creating a Remote Copy group for a Synchronous Long Distance Remote Copy configuration, repeat steps 2 and 3 for the second **Backup Volume on** list of virtual volumes.

4. Click **Add**.
5. If you wish to remove a volume from the group, select a volume from the volume list at the bottom of the wizard and click **Remove**.
6. Click **Next** to review a summary of changes, or click **Finish**.

Step 3. Summary

➡Review the summary information and when satisfied, click **Finish**.

See also:

Viewing Remote Copy Groups

Removing Remote Copy Groups

To remove a Remote Copy group:

1. Access the Remote Copy Groups screen.
2. In the upper pane, select the group(s) you wish to remove.
3. Right-click the selection and click **Remove Remote Copy Group(s)**.

   The **Remove Remote Copy Group(s)** dialog box appears.

4. Click **Stop group(s)** in order to remove the associated Remote Copy targets.
5. When prompted for confirmation, click **Yes** to continue.
6. Click **OK**.

See also:

Viewing Remote Copy Groups

Selecting Multiple Items

Working with Remote Copy Links

The InForm Management Console allows you to create and remove Remote Copy links.

Creating Remote Copy Links

Removing Remote Copy Links

Pinging Remote Copy Links

Creating Remote Copy Links

Note: Only two Remote Copy links are allowed.

To add a Remote Copy link:

1. Access the Remote Copy Links screen.
2. In the right pane, right-click in the table of the system on which you wish to create a link and select **Create Link**.

   The **Create Remote Copy Link** dialog box appears.

3. A graphical representation of each system's Remote Copy ports appears under **Create Links**. Click and drag from one port on one system to a port on the other system. Repeat for a second port.
4. For IP links, in the **IP Settings** groups for each system/port, all fields are automatically populated based on the link relationship you established under **Create Links**.
   a. (Optional) Enter the gateway address for each system/port.
   b. (Optional) Click **Apply** to test the link configuration, or **Ping** to test the communication between the links.
5. For Fibre Channel links, in the **Settings** groups for each system/port:
   a. Connection Type - Select **Point** for point-to-point mode or **Loop** for arbitrated loop mode.
   b. Configured Rate - Select **1**, **2**, **4** Gbps, or **Auto (default)**.
   c. Click **Apply** to test the link configuration.
6. Click **OK**.

See also:

Viewing Remote Copy Links

Removing Remote Copy Links

To remove a Remote Copy link:

1. Access the Remote Copy Links screen.
2. In the right pane, select the link(s) you wish to remove.
3. Right-click the selection and then click **Remove Link**.

   The **Remove Remote Copy Link(s)** dialog box appears.

4. (Optional) If you wish to remove the selected link and its peers at the same time, select **Remove peer Remote Copy links**.
5. Click **OK**.

See also:

Viewing Remote Copy Links

Selecting Multiple Items

Pinging RCIP Links

When creating Remote Copy over IP (RCIP) links, you are provided the opportunity to configure and ping the link ports to verify their validity and communication.

When pinging RCIP link ports:

- You can click **Details** in the **Port Configuration** or **Ping** dialog boxes to show or hide details about the configuration or ping operation, respectively.
- If the MTU value of the ports is different, for example one value 1500 and the other value 9000, the lower packet size (1500) is used during the ping operation.
- If both ports' MTU values are 9000, **Jumbo Ping** is displayed as the **Ping** group box title.

Configuring and Pinging the Remote Copy Links

Clicking **Apply** after entering or changing the requested link information during Remote Copy link creation results in the entered configuration first being tested to check its validity, and then proceeding with the ping operation to check communication between the link ports. The ping is not executed if the configuration fails.

Pinging the Remote Copy Links

Clicking **Ping** after entering or changing the requested link information during Remote Copy link creation results in a ping operation on the entered link ports.

See also:

Creating Remote Copy Links

Configuring 1-to-1 Remote Copy

Configuring 1-to-N Remote Copy

Configuring N-to-1 Remote Copy

Configuring Synchronous Long Distance Remote Copy

Working with Remote Copy Targets

Remote Copy target definitions are descriptors on one Remote Copy system that identify another a Remote Copy system. In a Remote Copy server pair, the servers are each defined as targets, relative to each other, for Remote Copy operations. The InForm Management Console allows you to perform the following:

Create Remote Copy Targets

Edit Remote Copy Targets

Remove Remote Copy Targets

Creating Remote Copy Targets

You can add Remote Copy targets to your existing Remote Copy configuration(s).

- If you add a new target to an existing 1-to-1 Remote Copy configuration, you will effectively create a 1-to-N or N-to-1, Remote Copy configuration.
- If you add a new target to an existing 1-to-N or N-to-1 Remote Copy configuration, you will be adding an additional backup or primary target, respectively.
- You cannot add new targets to a Synchronous Long Distance Remote Copy configuration.

The following restrictions apply:

- For the current release, a 1-to-N Remote Copy configuration can have a maximum of two backup servers.
- In an N-to-1 Remote Copy relationship, a maximum of four primary (source) InServ Storage Servers use the same InServ Storage Server as backup server.
- In order to configure Synchronous Long Distance Remote Copy, at least two of the servers must have Fibre Channel ports. The synchronous connection must be a Fibre Channel connection, while the asynchronous periodic connection can be either all Fibre Channel (over an IP network) or all IP. Only unidirectional functionality is allowed between Remote Copy pairs.

To create a Remote Copy target:

1. Access the Remote Copy Targets screen.
2. Right-click the system for which you wish to create a new Remote Copy target, and then select **Create Target**.

The **Create Remote Copy Target** wizard appears.

Step 1. Targets

1. Click a storage server graphic. In the menu that appears, select a storage server to assign.

Note: Only available InServ Storage Servers appear.

2. (Optional) Under **Update System's Location**, enter a location for each storage server, e.g. **Lab 1, New York**.
3. (Optional) Under **Name Targets**, the **Target Name** fields are automatically populated with the storage server names. You can enter an alternate name if you wish.
4. Click **Next**.

Step 2. Links

1. A graphical representation of each system's Remote Copy ports appears under **Create Links**. Click and drag from one port on one system to a port on the other system. Repeat for the other Remote Copy ports.
2. In the **IP Settings** groups for each system/port, all fields are automatically populated based on the link relationship you established under **Create Links**.
3. (Optional) Enter the gateway address for each system/port.
4. (Optional) Click **Apply** to test the link configuration, or **Ping** to test the communication between the links.
5. Click **Finish**.

See also:

Viewing Remote Copy Targets

Pinging Remote Copy Links

Configuring 1-to-N Remote Copy

Configuring N-to-1 Remote Copy

Configuring Synchronous Long Distance Remote Copy

Editing Remote Copy Targets

To edit a Remote Copy target:

1. Access the Remote Copy Targets screen.
2. Right-click the Remote Copy target you wish to edit, and then select **Edit Target**.

   The **Edit Remote Copy Target** dialog box appears.

3. Click **Advanced**.
4. Enter a value in the **Bandwidth** field.
5. Enter a value in the **Latency** field.
6. Click **OK**.

See also:

Viewing Remote Copy Targets

Removing Remote Copy Targets

To remove a Remote Copy target:

1. Access the Remote Copy Targets screen.
2. Select one or more Remote Copy targets to remove.
3. Right-click the selection, and then select **Remove Target**.

   The **Remove Remote Copy Target** dialog box appears.

4. (Optional) If you wish to remove Remote Copy groups associated with the selected target(s), and dismiss the target(s) from groups with additional targets, select **Remove or dismiss targets from groups**.
5. Click **OK**.

See also:

Viewing Remote Copy Targets

Selecting Multiple Items

Remote Copy Disaster Recovery

When a system in a Remote Copy setup becomes unavailable, you can perform disaster recovery operations to continue writing data to the available system(s).

The disaster recovery sequence is as follows:

1. Failover Remote Copy groups to the backup server.
2. Recover the Remote Copy groups to the primary (source) server once the source server has been brought back up and is running normally.
3. Restore the Remote Copy groups to their normal operation.

The following topics provide instructions on performing disaster recovery:

Failover Remote Copy Groups

Switch Failover Remote Copy Groups

Recover Remote Copy Groups

Restore Remote Copy Groups

The InForm Management Console also provides the flexibility to "undo" a disaster recovery failover operation. This is described in Revert Remote Copy Groups.

Failover Remote Copy Groups

When the source server in a Remote Copy setup becomes unavailable, you can perform a failover operation on the Remote Copy groups in order to continue your normal operations on the backup server(s) while the primary server is down.

To failover Remote Copy groups:

1. Navigate to the Remote Copy Groups screen.
2. In the right pane, select the Remote Copy group(s) you wish to failover.
3. Right-click and select **Stop Remote Copy Group(s)**.
4. Select the stopped groups.
5. Right-click and select **Failover Remote Copy Group(s)**.

   The **Remote Copy Failover** dialog box appears.

   When performing failover on Remote Copy groups, the groups on the backup server reverse roles to become primary groups, i.e. data is written directly to those groups as data would normally be written to groups on the primary server.

6. (Optional) Click **Advanced** to display additional failover options.
7. If you clicked **Advanced**:
   a. If you do not want to sync the groups after role reversal has occurred, select **Do not sync group after role reversal is completed**.

   b. If you do not want to promote the snapshots to base volumes, select **Do not promote snapshots to base volumes**.
   c. If you do not want to continue taking snapshots during failover, select **Do not take snapshots**.
8. Click **OK**.
9. Click **Yes** when prompted for confirmation.

In the right pane of the Remote Copy Groups screen:

- **Primary-Rev** is displayed under the **Backup Role** column indicating that the groups on the backup server are currently acting as the primary groups. Any data is written to the groups on the backup server.

- The **DR state** column displays **Failover**.

See also:

Viewing Remote Copy Groups

Selecting Multiple Items

Recover Remote Copy Groups

Switch Failover Remote Copy Groups

Note: The switch failover operation is only allowed for Synchronous Long Distance Remote Copy setups.

For Synchronous Long Distance Remote Copy, the InForm Management Console allows you to switch failover of Remote Copy groups from one backup server to the other backup server. For example, in a Synchronous Long Distance Remote Copy setup where source server A is backed up to backup servers B and C, if Remote Copy groups are failed over from source server A to backup server B, you can switch failover from backup server B to backup server C.

Note: The following procedure assumes that failover has already been performed on one backup system.

To switch failover Remote Copy groups:

1. Navigate to the Remote Copy Groups screen.
2. In the left pane, right-click the graphic of the system on which you wish to switch failover and select **Switch Failover Groups from <original failover system>**.

   The **Remote Copy Switch Failover** dialog box appears.

3. (Optional) Click **Advanced** to display additional failover options.
4. (If you clicked **Advanced)** If you do not want to continue taking snapshots during failover, select **Do not take snapshots**.
5. Click **OK**.
6. Click **Yes** when prompted for confirmation.

In the right pane of the Remote Copy Groups screen:

- **Primary-Rev** is displayed under the **Backup Role** column for the server you switched failover to, indicating that the groups on the backup server are currently acting as the primary groups. Any data is written to the groups on the backup server.
- The **DR state** column displays **Failover**.

See also:

Viewing Remote Copy Groups

Selecting Multiple Items

Revert Remote Copy Groups

You can undo a failover operation by reverting the Remote Copy groups to their normal state. For example, you may wish to revert the groups if you have failed over the groups to the backup server, but the source server has come back online and there has not been any new data written to the backup server.

To revert Remote Copy groups:

1. Navigate to the Remote Copy Groups screen.
2. In the right pane, select the Remote Copy group(s) on which you performed failover.
3. Right-click and select **Revert Failover Remote Copy Group(s)**.

   The **Remote Copy Revert Failover** dialog box appears.

4. (Optional) Click **Advanced** to display additional revert options.
   a. If you do not want to promote the snapshots to base volumes, select **Do not promote snapshots to base volumes**.
   b. If you do not want to continue taking snapshots, select **Do not take snapshots**.
5. Click **OK**.
6. Click **Yes** when prompted for confirmation.

In the right pane of the Remote Copy Groups screen:

- **Primary** is displayed under the **Source Role** column and **Secondary** is displayed under the **Backup Role** column indicating that the Remote Copy groups have been restored to their original roles.
- The **DR state** column displays **Normal**.

- A green arrow is displayed under the **Replication** column indicating the original direction of data replication.

See also:

Viewing Remote Copy Groups

Selecting Multiple Items

Recover Remote Copy Groups

If you performed failover on your Remote Copy groups due to a source server failure, you must recover the groups to the source server once the source server is brought back up.

To recover Remote Copy groups:

1. Navigate to the Remote Copy Groups screen.
2. In the right pane, select the Remote Copy group(s) on which you performed failover.
3. Right-click and select **Recover Remote Copy Group(s)**.

   The **Remote Copy Recover** dialog box appears.

4. (Optional) Click **Advanced** to display additional recover options. If you do not want to sync the groups after role reversal has occurred, select **Do not sync group after role reversal is completed**.
5. Click **OK**.
6. Click **Yes** when prompted for confirmation.

In the right pane of the Remote Copy Groups screen:

- **Secondary-Rev** is displayed under the **Source Role** column indicating that the groups on the source server are currently acting as backup to the groups on the backup server. Any data is written to the groups on the backup server and then replicated on the source server.
- The **DR state** column displays **Recover**.
- A yellow arrow is displayed under the **Replication** column indicating the reversed direction of data replication.

To restore the original source/backup server relationship where data is written to the groups on the source server, you must restore the Remote Copy groups.

See also:

Viewing Remote Copy Groups

Selecting Multiple Items

Restore Remote Copy Groups

Restore Remote Copy Groups

If you recovered your Remote Copy groups, you must restore the groups in order to restore the original Remote Copy relationship between your source and backup server(s).

To restore Remote Copy groups:

1. Navigate to the Remote Copy Groups screen.
2. In the right pane, select the recovered Remote Copy group(s).
3. Right-click and select **Restore Remote Copy Group(s)**.

   The **Remote Copy Restore** dialog box appears.

4. (Optional) Click **Advanced** to display additional restore options.
   a. If you do not want to sync the groups after role reversal has occurred, select **Do not sync group after role reversal is completed**.
   b. If you do not want to continue taking snapshots, select **Do not take snapshots**.
5. Click **OK**.
6. Click **Yes** when prompted for confirmation.

In the right pane of the Remote Copy Groups screen:

- **Primary** is displayed under the **Source Role** column and **Secondary** is displayed under the **Backup Role** column indicating that the Remote Copy groups have been restored to their original roles.
- The **DR state** column displays **Normal**.
- A green arrow is displayed under the **Replication** column indicating the original direction of data replication.

See also:

Viewing Remote Copy Groups

Selecting Multiple Items

Working with the Performance Manager

The **Performance Manager** provides pre-defined performance charts for physical disks, host ports, and disk ports. In addition, the **Performance Manager** allows you create, edit, and save your own customized performance charts.

Viewing Performance

Creating a New Chart

Saving a Chart

Editing a Chart

Viewing Performance

The InForm Management Console provides pre-defined performance charts for physical disk usage, disk port, and host ports.

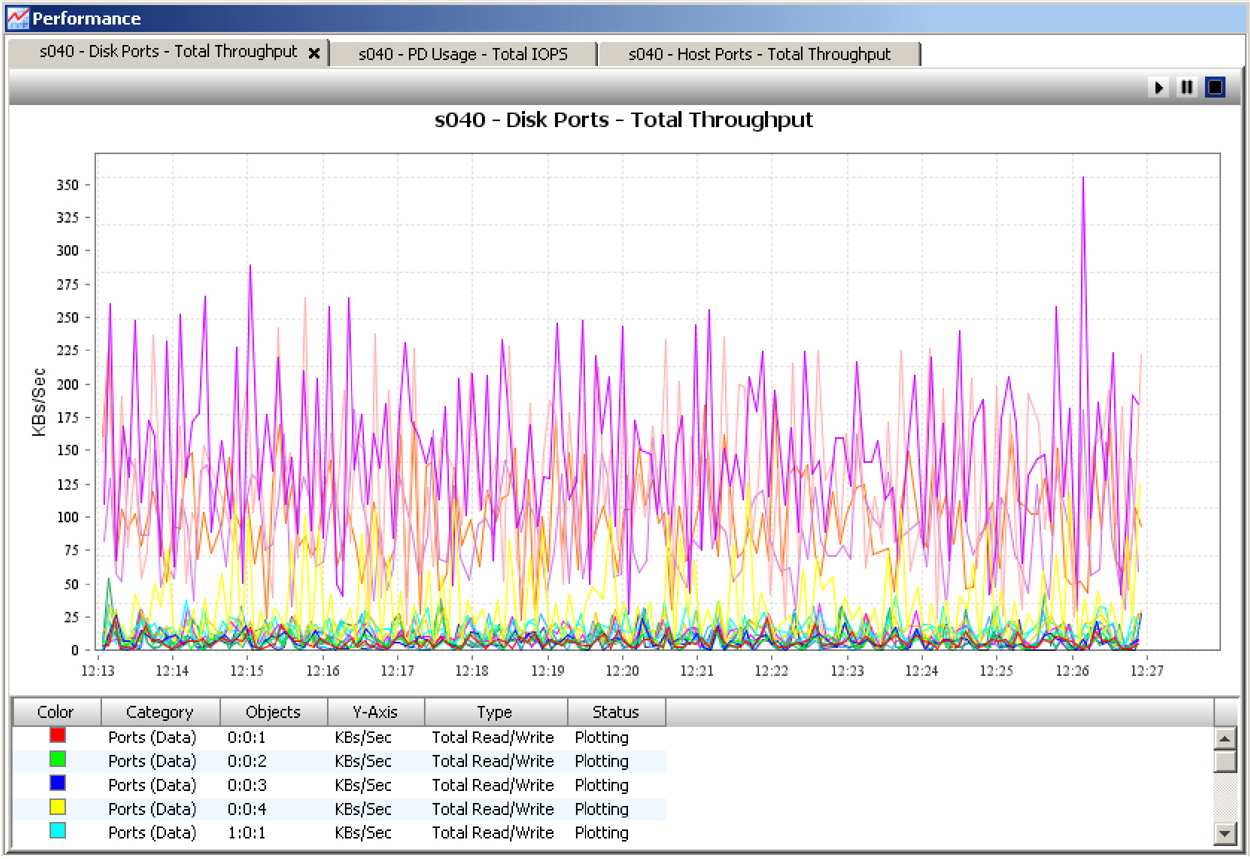
To view a pre-defined performance chart:

1. In the Manager Pane, click **Performance**.
2. In the Management Tree, click either the **Physical Disks** or **Ports (Data)** node under the system for which you wish to view performance.
3. Click **PD Usage - Total IOPS**, **Disk Ports - Total Throughput**, or **Hosts Ports - Total Throughput**.
4. Repeat steps 2 and 3 for any additional performance charts you wish to view.

A performance chart for each selected chart type is displayed in the Management window and data collection and chart generation begins.

Viewing Performance Over Time

The **Disk Ports** and **Host Ports** charts display line graphs, which show performance over time.


Performance
s040 - Disk Ports - Total Throughput
s040 - PD Usage - Total IOPS
s040 - Host Ports - Total Throughput
s040 - Disk Ports - Total Throughput
KBs/Sec
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
12:13
12:14
12:15
12:16
12:17
12:18
12:19
12:20
12:21
12:22
12:23
12:24
12:25
12:26
12:27

Color	Category	Objects	Y-Axis	Type	Status
🟥	Ports (Data)	0:0:1	KBs/Sec	Total Read/Write	Plotting
🟩	Ports (Data)	0:0:2	KBs/Sec	Total Read/Write	Plotting
🟦	Ports (Data)	0:0:3	KBs/Sec	Total Read/Write	Plotting
🟨	Ports (Data)	0:0:4	KBs/Sec	Total Read/Write	Plotting
🟦	Ports (Data)	1:0:1	KBs/Sec	Total Read/Write	Plotting

Each started chart is tabbed at the top of the Management window. Simply click the tab for the chart you wish to view.

At any time, you can use the controls at the upper right corner of each chart to pause or stop the generation of the performance chart.

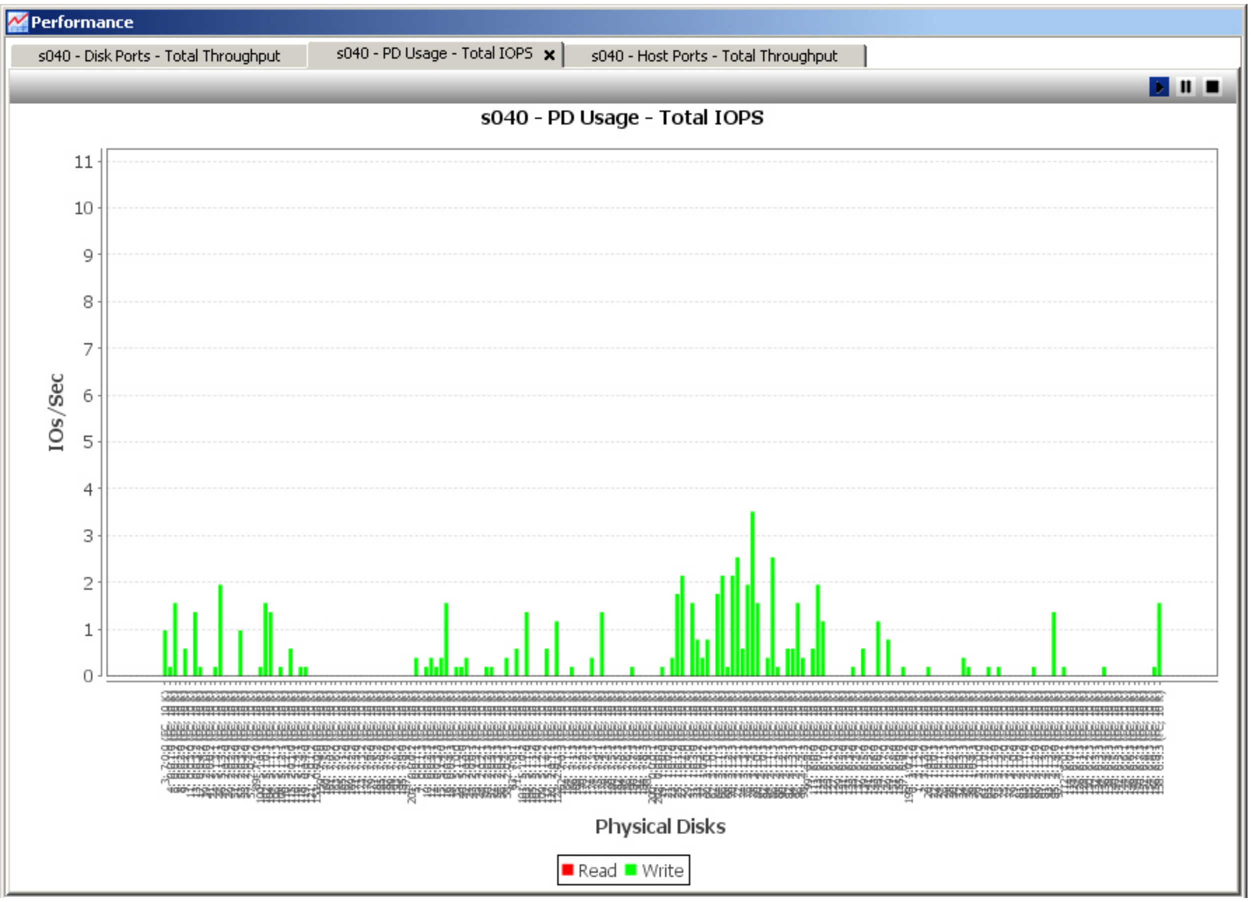
- Pausing the chart will stop the plotting of data, but data collection will still occur in the background.
- Stopping the chart stops both data collection and plotting.

The lower pane of the chart provides a legend indicating color/plot association. Clicking a row in the legend results in the corresponding plot becoming highlighted.

If you wish to change the color of a plot, click the color under the **Color** column and then choose a new color in the menu that appears.

Viewing Instantaneous Statistics

The **PD Usage** performance chart displays the latest updated physical disk IOPs statistics. Instead of a line graph, a bar graph is displayed, which shows the physical disk performance at the moment.


Performance
s040 - Disk Ports - Total Throughput
s040 - PD Usage - Total IOPS
s040 - Host Ports - Total Throughput
s040 - PD Usage - Total IOPS
IOs/Sec
0
1
2
3
4
5
6
7
8
9
10
11
Physical Disks
🟥 Read 🟩 Write

See also:

Exporting Data

Creating a New Chart

To create a new performance chart, access the **Chart Configuration** wizard:

1. In the Manager Pane, click **Performance**.
2. In the Common Tasks panel, click **New Chart**.

Step 1. Chart Selection

1. Select either **Template** or **Custom**.
2. If you selected **Template**, select the type of objects to plot by choosing **PD Usage** under **Physical Disk**, or **Disk Ports**, **Host Ports**, **RCFC Ports**, or **RCIP Ports** under **Ports (Data)**.
3. If you selected Custom:
    a. **Name** - Enter a name for your chart.
    b. (Optional) **Description** - Enter a description.
    c. **Polling Interval** - Enter a value from 5 to 3,600 seconds.
4. Click **Next**.

Step 2. Object Selection

1. Select a system from the **System** list.
2. By default, all objects will be plotted in the chart. If you wish to choose objects, deselect the **All** checKiBox and then select objects to plot in the objects list.
3. Click **Next** to view the summary, or click **Finish**.

If you previously selected **Custom** in **Chart Selection**:

1. Select a system from the **System** list.
2. Select an object from the **Category** list.
3. By default, all objects will be plotted in the chart. If you wish to choose objects, deselect the **All** checKiBox and then select objects to plot in the objects list.
4. If you selected individual objects:
    a. (Optional) If you do not want a plot that combines all selected objects, uncheck the **Create a plot that aggregate all selected objects** checKiBox.
    b. (Optional) If you want to display the aggregate, but not an individual plot for the selected objects, uncheck the **Create an individual plot for each selected object** checKiBox.
5. From the **Y-Axis** list, select a performance metric.
6. From the **Type** list, select a value. (**Total Read / Write** = plot both reads and writes, **Read** = plot reads only, **Write** = plot writes only)
7. To change the default color shown, click the **Color** button and select a new color for the plot.
8. Click **Add** to add the new plot to the **Plots** list.
9. If you wish to add additional plots, repeat steps 1 through 8.
10. Click **Next** to view the summary, or click **Finish**.

Step 3. Summary

Review the summary information. When satisfied, click **Finish**.

See also:

- Manager Pane
- Common Actions Panel
- Viewing Performance
- Editing a Chart
- Saving a Chart

Saving a Chart

To save a chart:

1. Create a new chart.
2. In the Main Menu Bar, click **Actions** > **Performance** > **Save Chart**.
3. Enter a name for the chart and select a save location.
4. Click **Save**.

The saved chart will appear under the **Save Charts** tree node once saved.

Note: When saving a chart, only the chart configuration data is saved. The plot data is not saved.

See also:

- Manager Pane
- Viewing Performance
- Creating a New Chart
- Editing a Chart

Editing a Chart

To edit a chart, access the **Edit Chart Configuration** wizard:

1. In the Manager Pane, click **Performance**.
2. In the Management Tree, select a chart under the **Saved Charts** node.
3. In the Main Menu Bar, click **Actions** > **Performance** > **Edit Chart**.

Step 1. Chart Selection

1. Enter a new **Name**, **Description**, and/or **Polling Interval**.
2. Click **Next**.

Step 2. Object Selection

1. Select a system from the **System** list.
2. By default, all objects will be plotted in the chart. If you wish to choose objects, deselect the **All** checKiBox and then select objects to plot in the objects list.
3. Click **Next**.

If you are editing a custom chart:

1. Select a system from the **System** list.
2. Select an object from the **Category** list.
3. By default, all objects will be plotted in the chart. If you wish to choose objects, deselect the **All** checKiBox and then select objects to plot in the objects list.
4. If you selected individual objects:
    a. (Optional) If you do not want a plot that combines all selected objects, uncheck the **Create a plot that aggregate all selected objects** checKiBox.
    b. (Optional) If you want to display the aggregate, but not an individual plot for the selected objects, uncheck the **Create an individual plot for each selected object** checKiBox.
5. From the **Y-Axis** list, select a performance metric.
6. From the **Type** list, select a value. (**Total Read/Write** = plot both reads and writes, **Read** = plot reads only, **Write** = plot writes only)
7. To change the default color shown, click the **Color** button and select a new color for the plot.
8. Click **Add** to add the new plot to the **Plots** list.
9. If you wish to add additional plots, repeat steps 1 through 8.
10. Click **Next** to view the summary, or click **Finish**.

Step 3. Summary

➡Review the summary information. When satisfied, click **Finish**.

See also:

- Manager Pane
- Viewing Performance
- Creating a New Chart
- Saving a Chart

Working with the Event Manager

The **Event Manager** allows you to view system alerts for individual systems and all connected systems, and individual system events.

- Viewing the Alerts Summary
- Viewing System Alerts
- Viewing System Events

See also:

- Managing Alerts

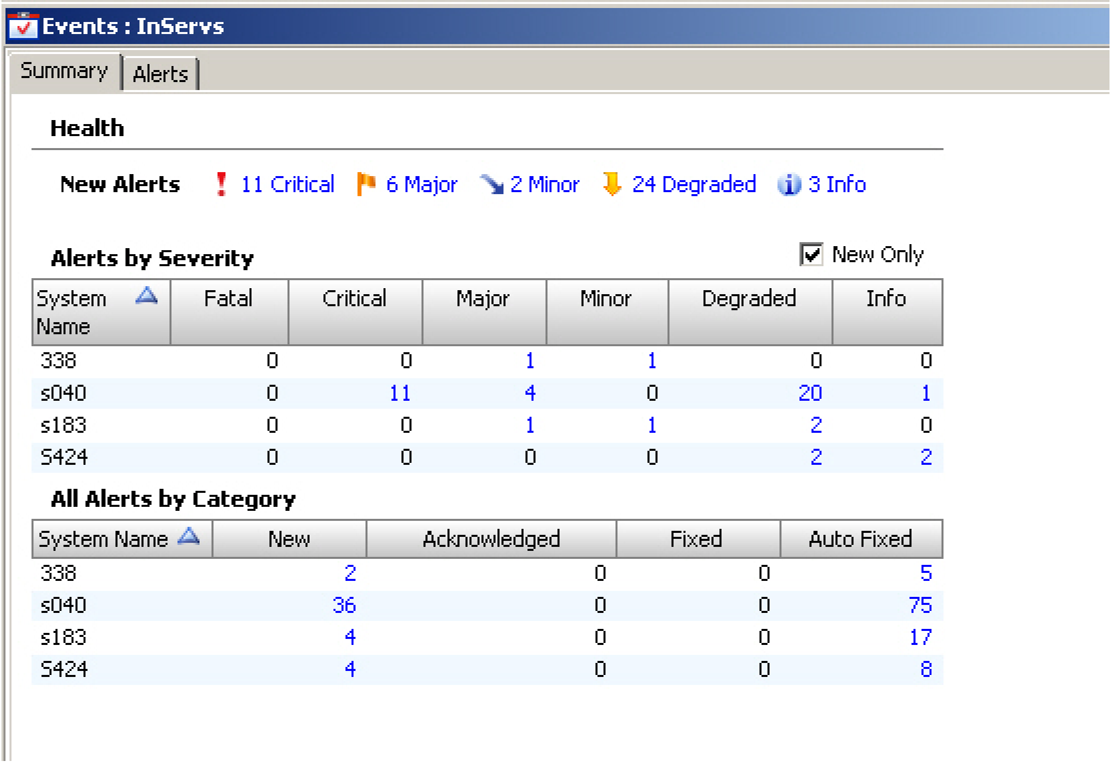
Viewing the Alerts Summary

The alerts summary screen provides an overview of the health of all connected InServ Storage Servers.

To view the alerts summary:

1. In the Manager Pane, click **Events**.
2. In the Mangement Tree, click **InServs**.
3. In the Management Window, click the **Summary** tab.

The alerts summary appears as follows:



Health

New Alerts ! 11 Critical 6 Major 2 Minor 24 Degraded 3 Info

Alerts by Severity ☑ New Only

System Name	Fatal	Critical	Major	Minor	Degraded	Info
338	0	0	1	1	0	0
s040	0	11	4	0	20	1
s183	0	0	1	1	2	0
S424	0	0	0	0	2	2

All Alerts by Category

System Name	New	Acknowledged	Fixed	Auto Fixed
338	2	0	0	5
s040	36	0	0	75
s183	4	0	0	17
S424	4	0	0	8

- The **New Alerts** row provides a count of each alert type for all connected systems. Each alert count and type listed in blue is a link to the **Alerts** tab, which displays only the selected alert type.
- Under **Alerts by Severity** and **All Alerts by Category**, each alert count listed in blue is a link to the alerts screen for an individual system.

See also:

Manager Pane

Alert Severity Indicators

Alert/Task/Connection Pane

Viewing System Alerts

Viewing System Events

Exporting Data

Viewing System Alerts

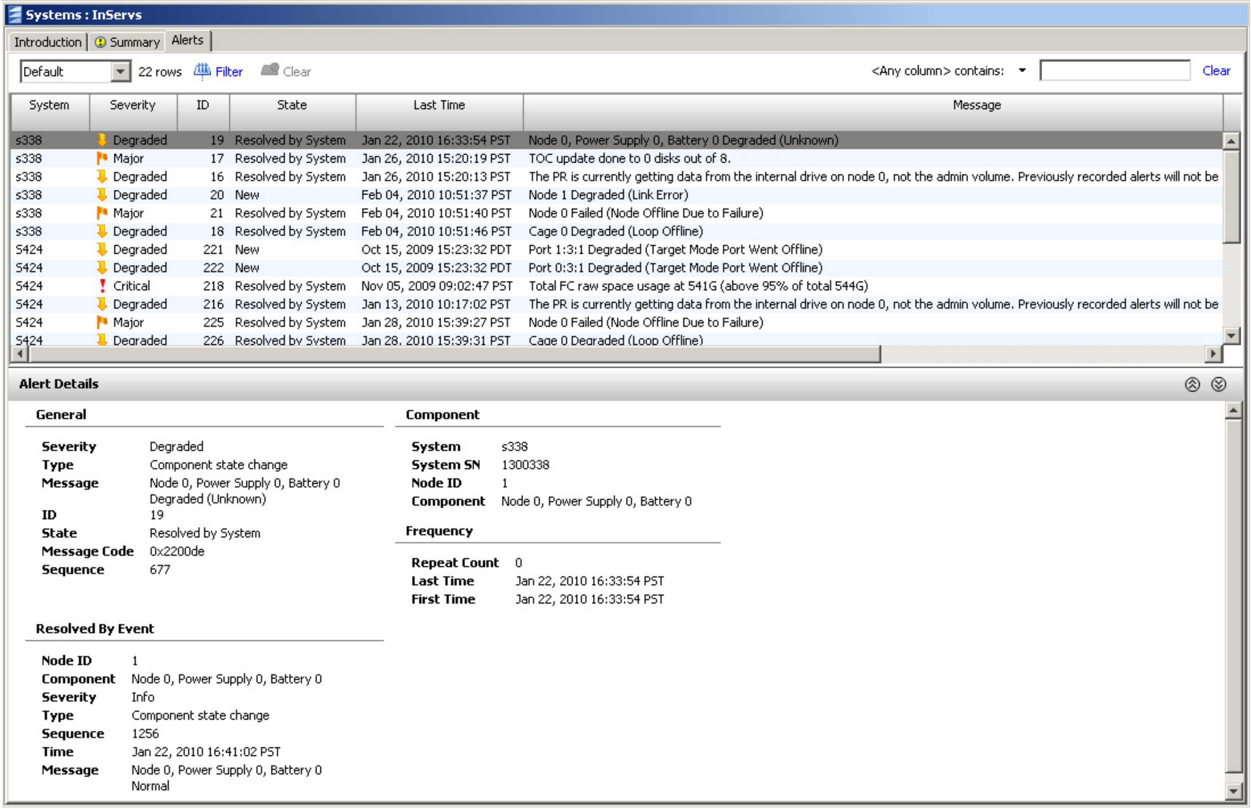
➡To view system alert information, access the **Systems** screen and then click the **Alerts** tab.

or

1. In the Manager Pane, click **Events**.
2. In the Management Tree, click the **InServs** node or a system node.
3. In the Management Window, click the **Alerts** tab.

The **Alerts** tab is split into an upper pane and lower pane. The upper pane display a summary of the alerts. The lower pane displays the details of an alert selected in the upper pane.

The information displayed in the **Alerts** tab is nearly identical between the information displayed for all connected systems and information displayed for a single system, with the only exception being an additional **System** column appears in the upper pane for all connected systems. The following figure displays the **Alerts** tab for all connected systems.



System	Severity	ID	State	Last Time	Message
s338	Degraded	19	Resolved by System	Jan 22, 2010 16:33:54 PST	Node 0, Power Supply 0, Battery 0 Degraded (Unknown)
s338	Major	17	Resolved by System	Jan 26, 2010 15:20:19 PST	TOC update done to 0 disks out of 8.
s338	Degraded	16	Resolved by System	Jan 26, 2010 15:20:13 PST	The PR is currently getting data from the internal drive on node 0, not the admin volume. Previously recorded alerts will not be
s338	Degraded	20	New	Feb 04, 2010 10:51:37 PST	Node 1 Degraded (Link Error)
s338	Major	21	Resolved by System	Feb 04, 2010 10:51:40 PST	Node 0 Failed (Node Offline Due to Failure)
s338	Degraded	18	Resolved by System	Feb 04, 2010 10:51:46 PST	Cage 0 Degraded (Loop Offline)
S424	Degraded	221	New	Oct 15, 2009 15:23:32 PDT	Port 1:3:1 Degraded (Target Mode Port Went Offline)
S424	Degraded	222	New	Oct 15, 2009 15:23:32 PDT	Port 0:3:1 Degraded (Target Mode Port Went Offline)
S424	Critical	218	Resolved by System	Nov 05, 2009 09:02:47 PST	Total FC raw space usage at 541G (above 95% of total 544G)
S424	Degraded	216	Resolved by System	Jan 13, 2010 10:17:02 PST	The PR is currently getting data from the internal drive on node 0, not the admin volume. Previously recorded alerts will not be
S424	Major	225	Resolved by System	Jan 28, 2010 15:39:27 PST	Node 0 Failed (Node Offline Due to Failure)
S424	Degraded	226	Resolved by System	Jan 28, 2010 15:39:31 PST	Cage 0 Degraded (Loop Offline)

Alert Details

General

Severity	Degraded
Type	Component state change
Message	Node 0, Power Supply 0, Battery 0 Degraded (Unknown)
ID	19
State	Resolved by System
Message Code	0x2200de
Sequence	677

Component

System	s338
System SN	1300338
Node ID	1
Component	Node 0, Power Supply 0, Battery 0

Frequency

Repeat Count	0
Last Time	Jan 22, 2010 16:33:54 PST
First Time	Jan 22, 2010 16:33:54 PST

Resolved By Event

Node ID	1
Component	Node 0, Power Supply 0, Battery 0
Severity	Info
Type	Component state change
Sequence	1256
Time	Jan 22, 2010 16:41:02 PST
Message	Node 0, Power Supply 0, Battery 0 Normal

The upper and lower panes are described in greater detail below.

Upper Pane

Lower Pane

Upper Pane

The upper pane of the **Alerts** tab displays the following:

Column	Description
System	The system on which the alert occurred.
Severity	The severity of the alert. See Alert Severity Indicators.
ID	The alert ID.
State	The alert state.
Last Time	The last occurrence of the alert.
Message	A brief description of the alert.
Repeat Count	The number of times the alert has been issued.
First Time	The first occurrence of the alert.

Lower Pane

The lower pane of the **Alerts** tab displays detailed information about an alert selected in the upper pane. The lower pane displays the following information:

Group	Field	Description
General	**Severity**	The alert severity. See Alert Severity Indicators.
	Type	The alert type.
	Message	A brief description of the alert.
	ID	The alert ID.
	State	The alert state.
	Message Code	The alert message code.
	Sequence	The alert sequence.

Resolved by Event	**Node ID**	The controller node ID.
	Component	The component for which the alert was issued.
	Severity	The alert severity. See Alert Severity Indicators.
	Type	The alert type.
	Sequence	The alert sequence.
	Time	The time the alert was resolved.
	Message	A brief description of the alert.
Component	**System**	The name of the server that generated the alert.
	System SN	The server's serial number.
	Node ID	The node ID.
	Component	The affected system components.
Frequency	**Repeat Count**	The number of times the alert was issued.
	Last time	The last occurrence of the alert.
	First time	The first occurrence of the alert.

See also:

- Alert Severity Indicators
- Alert/Task/Connection Pane
- Viewing the Alerts Summary
- Managing Alerts
- Viewing System Events

Exporting Data

Removing System Alerts

To remove system alerts:

1. Access the system **Alerts** tab.
2. Select the alert(s) you wish to remove.
3. Right-click your selection and click **Remove**.

   The **Remove Alert(s)** dialog box appears.

4. Click **OK**.

See also:

Viewing System Alerts

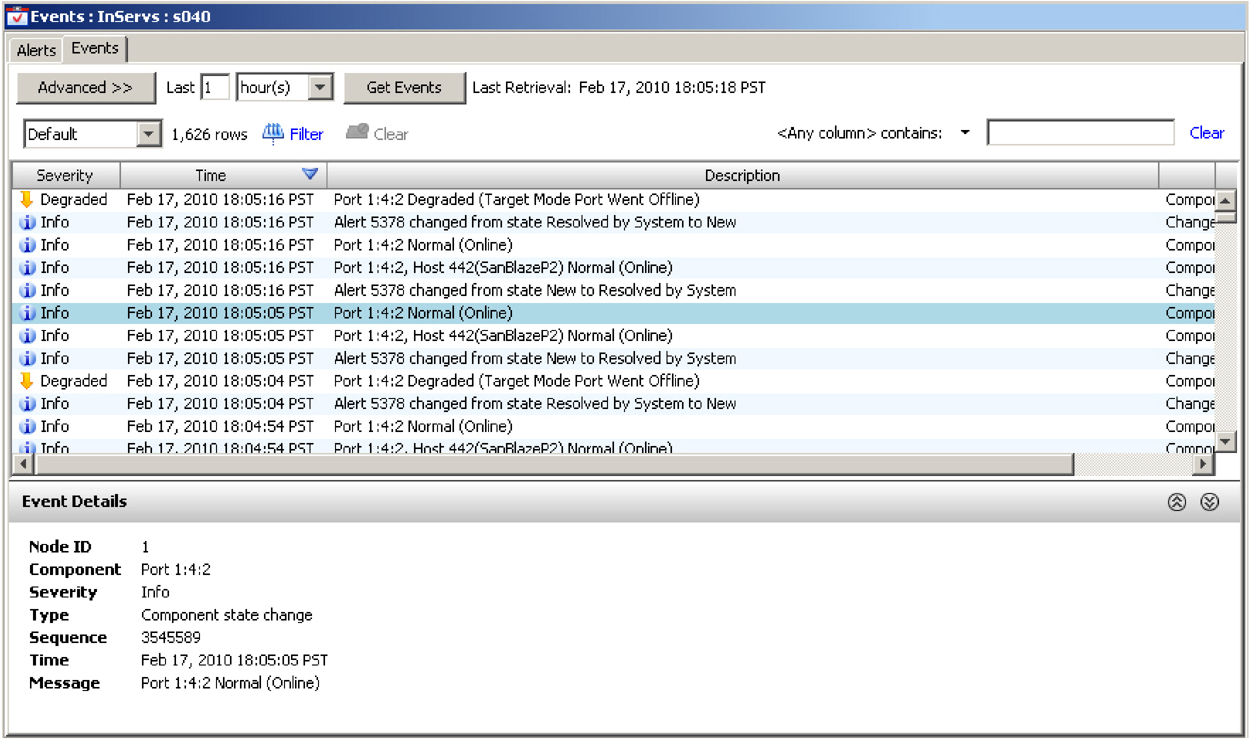
Selecting Multiple Items

Viewing System Events

To view system events:

1. In the Manager Pane, click **Events**.
2. In the Management Tree, click the system node for which you wish to view events.
3. In the Management Window, click the **Events** tab.
4. In the **Last** text box, enter the appropriate number to narrow the displayed events.
5. Select the drop-down list increment, **day(s)**, **hour(s)**, **minute(s)**.
6. Click **Get Events**.

The events tab appears as follows:



Last 1 hour(s)

Last Retrieval: Feb 17, 2010 18:05:18 PST

1,626 rows

Severity	Time	Description	
Degraded	Feb 17, 2010 18:05:16 PST	Port 1:4:2 Degraded (Target Mode Port Went Offline)	Compo
Info	Feb 17, 2010 18:05:16 PST	Alert 5378 changed from state Resolved by System to New	Change
Info	Feb 17, 2010 18:05:16 PST	Port 1:4:2 Normal (Online)	Compo
Info	Feb 17, 2010 18:05:16 PST	Port 1:4:2, Host 442(SanBlazeP2) Normal (Online)	Compo
Info	Feb 17, 2010 18:05:16 PST	Alert 5378 changed from state New to Resolved by System	Change
Info	Feb 17, 2010 18:05:05 PST	Port 1:4:2 Normal (Online)	Compo
Info	Feb 17, 2010 18:05:05 PST	Port 1:4:2, Host 442(SanBlazeP2) Normal (Online)	Compo
Info	Feb 17, 2010 18:05:05 PST	Alert 5378 changed from state New to Resolved by System	Change
Degraded	Feb 17, 2010 18:05:04 PST	Port 1:4:2 Degraded (Target Mode Port Went Offline)	Compo
Info	Feb 17, 2010 18:05:04 PST	Alert 5378 changed from state Resolved by System to New	Change
Info	Feb 17, 2010 18:04:54 PST	Port 1:4:2 Normal (Online)	Compo
Info	Feb 17, 2010 18:04:54 PST	Port 1:4:2, Host 442(SanBlazeP2) Normal (Online)	Compo

Node ID	1
Component	Port 1:4:2
Severity	Info
Type	Component state change
Sequence	3545589
Time	Feb 17, 2010 18:05:05 PST
Message	Port 1:4:2 Normal (Online)

The events tab is divided into an upper pane and a lower pane. The upper pane displays a summary of events on the system. The lower pane displays details about a selected event from the upper pane.

Filtering Events

To view a events with finer granularity:

1. In the Manager Pane, click **Events**.
2. In the Management Tree, click the system node for which you wish to view events.
3. In the Management Window, click the **Events** tab.
4. Click **Advanced>>**.
5. In the **Start Time** box, enter a date and time (the entered value will display events greater than or equal to this time).
6. (Optional) Click the **End Time** checKiBox and enter a date and time (the entered value will display events less than or equal to this time).
7. Click **Get Events**.

See also:

Alert Severity Indicators

Viewing System Alerts

Viewing the Alerts Summary

Exporting Data

Working with the Task Manager

The **Task Manager** allows you to retrieve, remove, and cancel tasks on InServ Storage Servers.

Viewing the Tasks Summary

Displaying Tasks

Removing Tasks

Cancelling Tasks

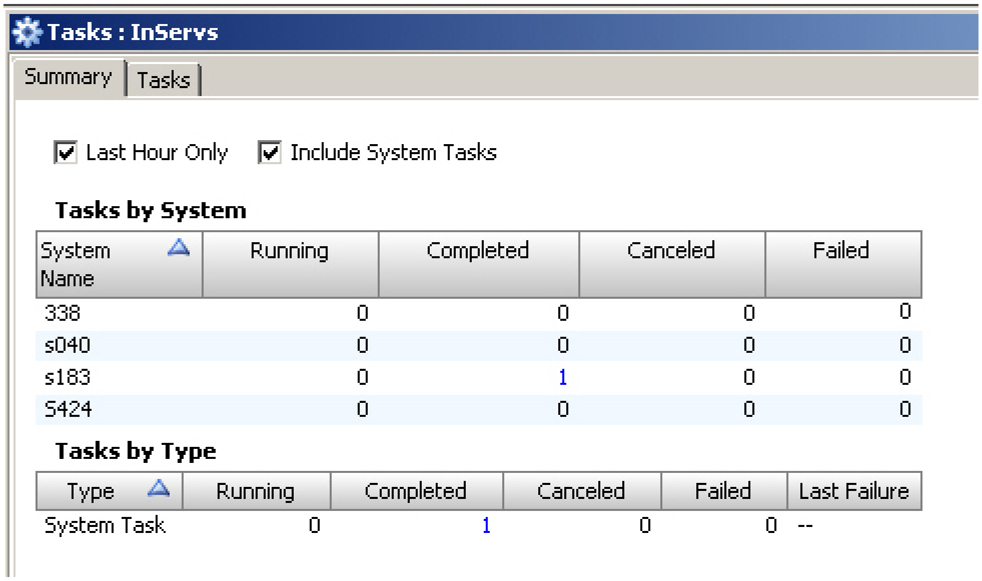
Viewing the Tasks Summary

The InForm Management Console allows you to view a summary of tasks for all connected systems or for a single connected system.

To view the tasks summary:

1. In the Manager Pane, click **Tasks**.
2. In the Management Tree, click **InServs**.
3. (Optional) If you wish to view tasks for a single system, select a system under the **InServs** node.
4. In the Management Window, click the **Summary** tab.
5. If you wish to view tasks from the last hour, select **Last Hour Only**. If you wish to view system tasks, select **Include System Tasks**.

The tasks **Summary** tab appears as follows.



☑ Last Hour Only ☑ Include System Tasks

Tasks by System

System Name	Running	Completed	Canceled	Failed
338	0	0	0	0
s040	0	0	0	0
s183	0	1	0	0
S424	0	0	0	0

Tasks by Type

Type	Running	Completed	Canceled	Failed	Last Failure
System Task	0	1	0	0	--

Note: If you selected a specific InServ Storage Server under the **InServs** node in the Management Tree, the **Tasks by System** group will not be displayed on the tasks **Summary** tab.

See also:

- Manager Pane
- Management Tree
- Management Window
- Displaying Tasks

Displaying Tasks

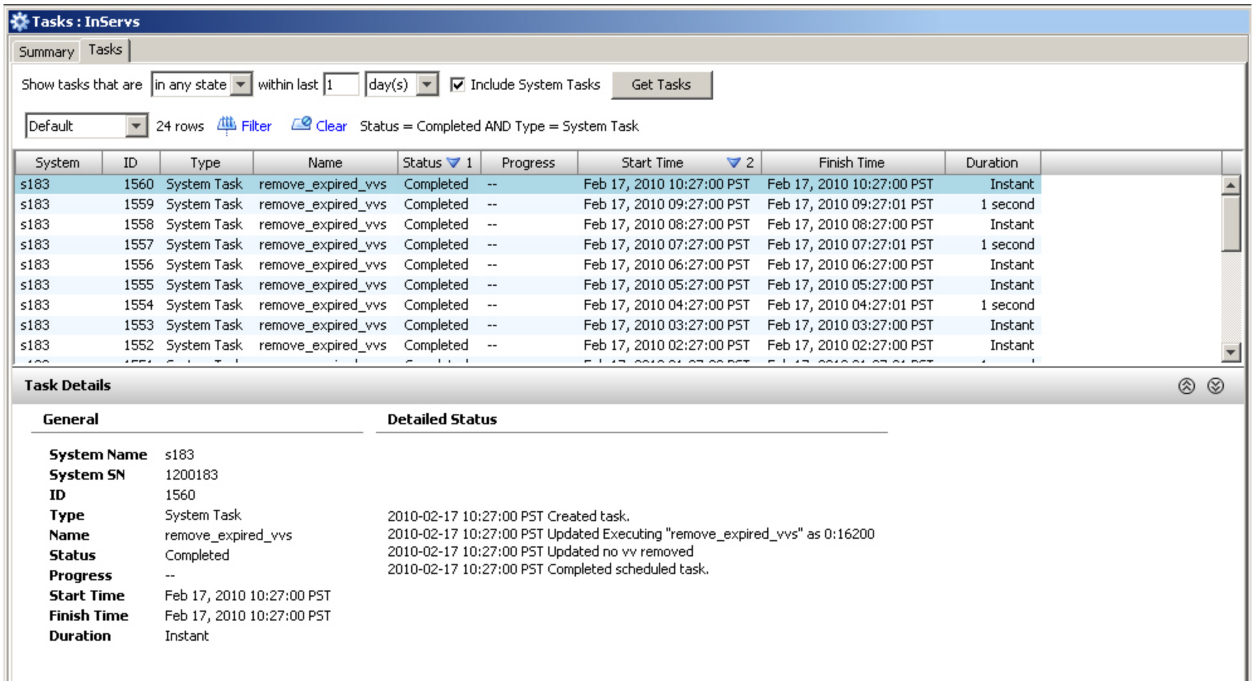
The InForm Management Console allows you to display completed, running, failed, and canceled tasks within a specified time period.

To display tasks:

1. In the Manager Pane, click **Tasks**.
2. In the Management Tree, click **InServs**.
3. (Optional) If you wish to display tasks for a single system, select a system under the **InServs** node.
4. In the Management Window, click the **Tasks** tab.
5. In the **Show tasks that are** list, select **in any state**, **Completed**, **Running**, **Canceled**, or **Failed**.

6. In the **within last** text box and list, enter the number and select either **hour(s)** or **day(s)**.
7. (Optional). Select **Include System Tasks** to also retrieve system tasks.
8. Click the **Get Tasks** button.

The upper pane of the **Tasks** tab displays task information per your entered parameters. The lower pane of the **Tasks** tab displays detailed information about a selected task from the upper pane. The **Tasks** tab appears as follows:



Show tasks that are in any state within last 1 day(s) ☑ Include System Tasks

Default 24 rows Status = Completed AND Type = System Task

System	ID	Type	Name	Status 1	Progress	Start Time 2	Finish Time	Duration
s183	1560	System Task	remove_expired_vvs	Completed	--	Feb 17, 2010 10:27:00 PST	Feb 17, 2010 10:27:00 PST	Instant
s183	1559	System Task	remove_expired_vvs	Completed	--	Feb 17, 2010 09:27:00 PST	Feb 17, 2010 09:27:01 PST	1 second
s183	1558	System Task	remove_expired_vvs	Completed	--	Feb 17, 2010 08:27:00 PST	Feb 17, 2010 08:27:00 PST	Instant
s183	1557	System Task	remove_expired_vvs	Completed	--	Feb 17, 2010 07:27:00 PST	Feb 17, 2010 07:27:01 PST	1 second
s183	1556	System Task	remove_expired_vvs	Completed	--	Feb 17, 2010 06:27:00 PST	Feb 17, 2010 06:27:00 PST	Instant
s183	1555	System Task	remove_expired_vvs	Completed	--	Feb 17, 2010 05:27:00 PST	Feb 17, 2010 05:27:00 PST	Instant
s183	1554	System Task	remove_expired_vvs	Completed	--	Feb 17, 2010 04:27:00 PST	Feb 17, 2010 04:27:01 PST	1 second
s183	1553	System Task	remove_expired_vvs	Completed	--	Feb 17, 2010 03:27:00 PST	Feb 17, 2010 03:27:00 PST	Instant
s183	1552	System Task	remove_expired_vvs	Completed	--	Feb 17, 2010 02:27:00 PST	Feb 17, 2010 02:27:00 PST	Instant

General

System Name	s183
System SN	1200183
ID	1560
Type	System Task
Name	remove_expired_vvs
Status	Completed
Progress	--
Start Time	Feb 17, 2010 10:27:00 PST
Finish Time	Feb 17, 2010 10:27:00 PST
Duration	Instant

Detailed Status

```
2010-02-17 10:27:00 PST Created task.
2010-02-17 10:27:00 PST Updated Executing "remove_expired_vvs" as 0:16200
2010-02-17 10:27:00 PST Updated no vv removed
2010-02-17 10:27:00 PST Completed scheduled task.
```

See also:

- Manager Pane
- Management Tree
- Management Window
- Removing Tasks
- Cancelling Tasks

Removing Tasks

To remove tasks:

1. Access the **Tasks** tab.
2. In the upper pane of the **Tasks** tab, select the task(s) you wish to remove.
3. Right-click the selection and then click **Remove Task** in the menu that appears.

   The **Remove Task(s)** dialog box appears.

4. Click **OK**.

See also:

Displaying Tasks

Selecting Multiple Items

Cancelling Tasks

To cancel tasks:

1. Access the **Tasks** tab.
2. In the upper pane of the **Tasks** tab, select the task(s) you wish to cancel.
3. Right-click the selection and then click **Cancel Task** in the menu that appears.

   The **Cancel Task(s)** dialog box appears.

4. Click **OK**.

See also:

Displaying Tasks

Selecting Multiple Items

Working with the Security Manager

The **Security Manager** allows you to create and manage users and domains, as well as view users, domains, and connections on the InServ Storage Server.

- Viewing the Security System Summary Screen
- Working with Users
- Working with Domains
- Working with Connections

Note: 3PAR Domains requires a 3PAR Domain license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

Note: For further information about 3PAR Domains and users, see the *3PAR InForm OS Concepts Guide*.

See also:

- Manager Pane
- Management Tree

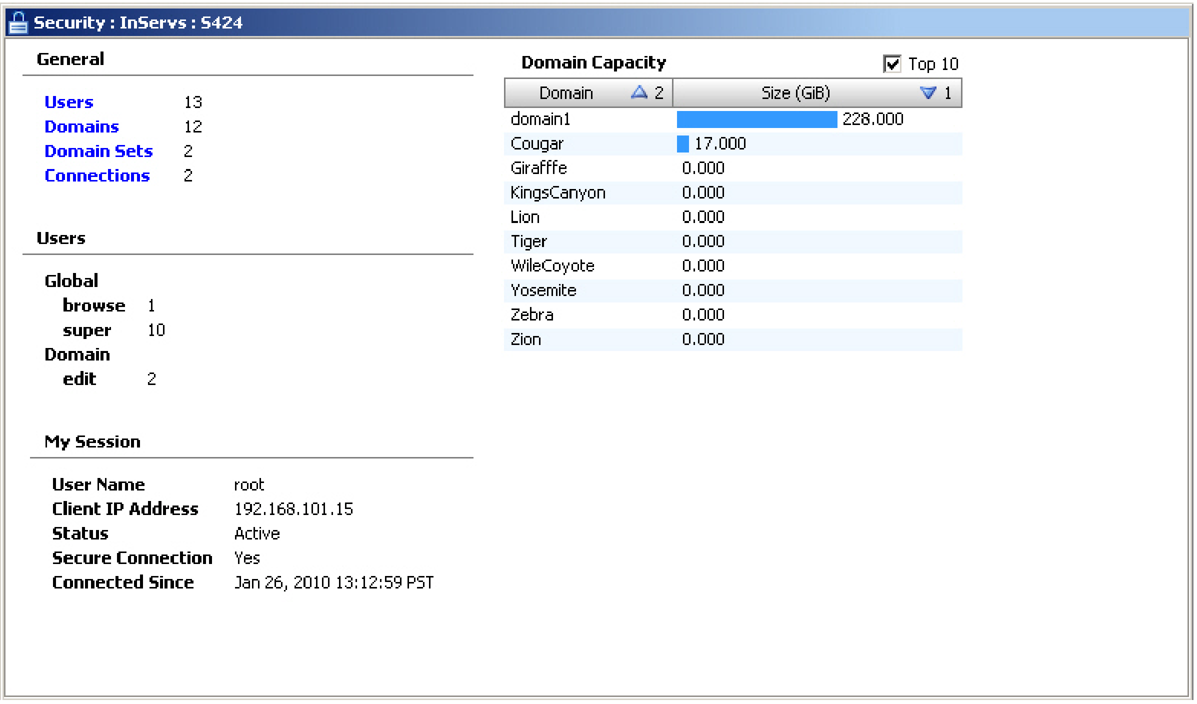
Viewing the Security System Summary Screen

The Security System Summary Screen provides an overview of all users, user connections, domains, domain sets, and connections.

To access the Security System summary screen:

1. Click **Security** in the Manager Pane.
2. In the Security Management Tree, select a system.

   The Security System summary screen appears in the Management Window. The following figure depicts the Security System summary screen for InServ system **S424**:



Security : InServs : S424

General

Users	13
Domains	12
Domain Sets	2
Connections	2

Users

Global
  browse 1
  super 10
Domain
  edit 2

My Session

User Name	root
Client IP Address	192.168.101.15
Status	Active
Secure Connection	Yes
Connected Since	Jan 26, 2010 13:12:59 PST

Domain Capacity ☑ Top 10

Domain ▲ 2	Size (GiB) ▼ 1
domain1	228.000
Cougar	17.000
Girafffe	0.000
KingsCanyon	0.000
Lion	0.000
Tiger	0.000
WileCoyote	0.000
Yosemite	0.000
Zebra	0.000
Zion	0.000

The Security System summary screen provides the following information:

Group	Field	Description
General	**Users**	The total number of system users. The **Users** heading is a link to the Users Screen.
	Domains	The number of domains residing on the system. The **Domains** heading is a link to the Domains Screen.
	Domain Sets	The number of domain sets on the system. The **Domains Sets** heading is a link to the Domain Sets screen.
	Connections	The number of user connections to the system. The **Connections** heading is a link to the User Connections screen.
Domain Capacity	**Domain**	The domain name.
	Size	The size (in GiB) of the domain.
	Top 10	ChecKiBox. If selected, only the largest (in GB) 10 system domains are displayed.

Users	**Global**	The number of non-domain users. This is broken down by the number of users per access privilege type (**super**, **edit**, **browse**).
	Domain	The number of domain users. This is broken down by the number of users per domain access privilege type (**edit**, **browse**).
My Session	**User Name**	The user name for the current InForm Management Console session.
	Client IP Address	The client IP address.
	Status	The session status, either **Active** or **Inactive**.
	Secure Connection	Indicates whether a secure connection is being used.
	Connected Since	The date and time the current connected session was started.

See also:

- Viewing Users
- Viewing Domains
- Viewing Domain Sets
- Viewing User Connections
- Management Tree
- Manager Pane
- Management Window

Working with Users

The **Security Manager** provides functionality to view and work with InServ Storage Server users.

- Viewing Users
- Creating Users
- Editing Users
- Removing Users

See also:

- Manager Pane

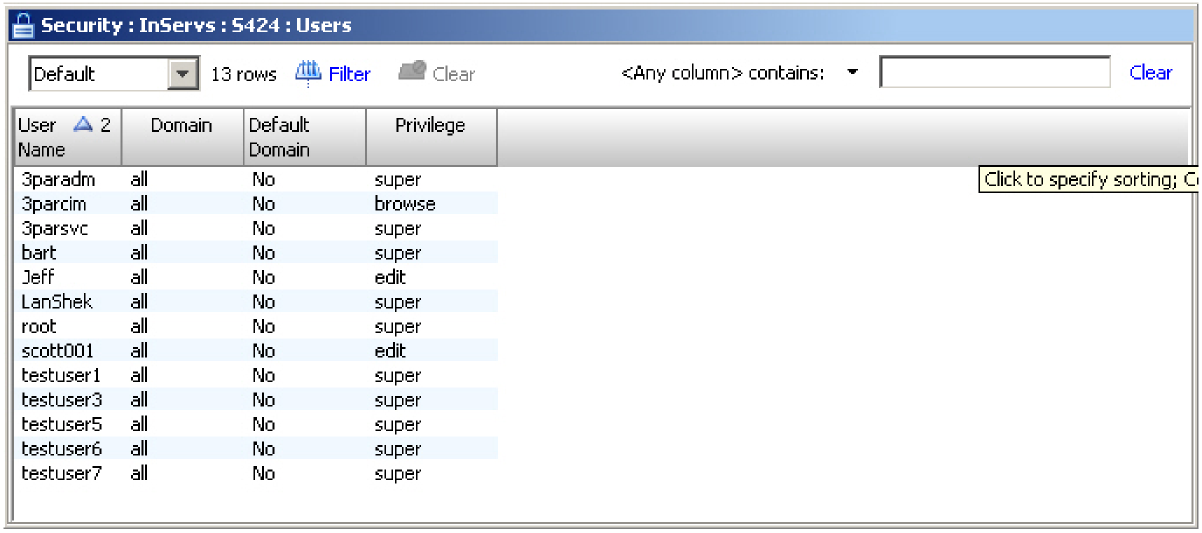
Viewing Users

The **Users** summary screen provides an overview of an InServ Storage Server's users.

To access the **Users** summary screen:

1. Click **Security** in the Manager Pane.
2. In the Security Management Tree, select the **Users** node for the system whose users you wish to view.

The **Users** summary screen is displayed in the Management Window.


Security : InServs : S424 : Users
Default
13 rows
Filter
Clear
<Any column> contains:
Clear
Click to specify sorting; C

User Name ▲ 2	Domain	Default Domain	Privilege
3paradm	all	No	super
3parcim	all	No	browse
3parsvc	all	No	super
bart	all	No	super
Jeff	all	No	edit
LanShek	all	No	super
root	all	No	super
scott001	all	No	edit
testuser1	all	No	super
testuser3	all	No	super
testuser5	all	No	super
testuser6	all	No	super
testuser7	all	No	super

The **Users** summary screen provides the following information:

Column	Description
User Name	The user name.
Domain	The domain to which the user belongs.
Default Domain	Whether or not the domain listed in the **Domain** column is the default domain for the user.
Privilege	The user's domain privilege level (**super**, **edit**, **browse**).

Note: 3PAR Domains requires a 3PAR Domain license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

Note: For further information about 3PAR Domains and users, see the *3PAR InForm OS Concepts Guide*.

See also:

- Viewing Domains
- Viewing Domain Sets
- Viewing User Connections
- Management Tree
- Manager Pane
- Management Window

Creating Users

To create a user, access the **Create User** wizard:

1. Click **Security** in the Manager Pane.
2. Click **Create User** in the Common Actions Panel.

The **Create User** wizard appears.

Step 1. Authentication

1. From the **Systems** group box, select the system on which the user will be created.
2. In the **Credentials** group box, enter the user name, password, and confirm the password.

Note: The password must be between six and eight characters.

3. Click **Next**.

Step 2. Authorization

1. In the **Privilege** group box, select the following:
   a. **Domain** - select a domain from the list.

Note: 3PAR Domains requires a 3PAR Domain license. For additional information about the license, and for information about 3PAR Domains and users, see the *3PAR InForm OS Concepts Guide*.

   b. **Privilege** - select the new user's privilege level in the selected domain.

2. Click **Add** to add the new user's selected privilege settings to the list in the **Domain** group box.
3. (Optional) Repeat steps 1 and 2 to add access to other domains.
4. (Optional) To remove a row from the **Domain** group box, select the row and click **Remove**.
5. Click **Next** to view summary information, or click **Finish**.

Step 3. Summary

➡Review the summary information. When satisfied, click **Finish**.

See also:

- Manager Pane
- Common Actions Panel
- Editing Users
- Removing Users
- Viewing Users
- Viewing the Security System Summary Manager

Editing Users

To edit a user, access the **Edit User** wizard:

1. Click **Security** in the Manager Pane.
2. Right-click the user you wish to edit in the **User** summary screen.
3. Click **Edit**.

The **Edit User** wizard appears.

Step 1. Authentication

> **Note:** Steps 1 and 2 are optional. If you do not wish to change the user's password, click **Next** to go to **Authorization**.

1. From the **Credentials** group box, select the **Change Password** checKiBox.
2. Enter the current password, new password, and then confirm the new password.

> **Note:** The password must be between six and eight characters.

3. Click **Next**.

Step 2. Authorization

1. In the **Privilege** group box, select the following:
   a. **Domain** - select a domain from the list.

> **Note:** 3PAR Domains requires a 3PAR Domain license. For additional information about the license, and for information about 3PAR Domains and users, see the *3PAR InForm OS Concepts Guide*.

   b. **Privilege** - select the new user's privilege level in the selected domain.

2. Click **Add** to add the new user's selected privilege settings to the list in the **Domain** group box.
3. (Optional) Repeat steps 1 and 2 to add access to other domains.
4. (Optional) To remove a row from the **Domain** group box, select the row and click **Remove**.
5. Click **Next** to view summary information, or click **Finish**.

Step 3. Summary

➜Review the summary information. When satisfied, click **Finish**.

See also:

- Manager Pane
- Creating Users
- Removing Users
- Viewing Users
- Viewing the Security System Summary Manager

Removing Users

To remove a user:

1. Click **Security** in the Manager Pane.
2. Right-click the user you wish to remove in the **User** summary screen.

Note: If you wish to remove multiple users (see Selecting Multiple Items), select the users you wish to remove before right-clicking.

3. Click **Remove**.
4. In the **Remove User** dialog box, click **OK**.

See also:

Manager Pane

Creating Users

Editing Users

Selecting Multiple Items

Viewing Users

Viewing the Security System Summary Manager

Working with Domains

The **Security Manager** provides functionality to view and work with domains and domain sets, as well as objects belonging to domains.

Viewing Domains

Creating Domains

Editing Domains

Removing Domains

Viewing Domain Sets

Creating Domain Sets

Editing Domain Sets

Removing Domain Sets

Moving Objects from One Domain to Another Domain

Note: 3PAR Domains requires a 3PAR Domain license. For additional information about the license, see the *3PAR InForm OS Concepts Guide*.

Note: For further information about 3PAR Domains and users, see the *3PAR InForm OS Concepts Guide*.

See also:

Manager Pane

Viewing Domains

You can view information about domains for all connected InServ Storage Servers or a single InServ Storage Server.

Viewing Domains for All InServs

To view domain information about all connected InServ Storage Severs:

1. Click **Security** in the Manager Pane.
2. In the Security Management Tree, click **InServs**.
3. In the Management Window, click the **Domains** tab.

   The **Domains** tab can be filtered to display **Summary** and **Capacity** information about the domains in all connected systems.

   - Summary information includes the system on which each domain resides and each domain's domain sets, number of CPGs, virtual volumes, hosts, and active VLUNs, and each domain's total capacity.
   - Capacity information includes:
     - the size of each domain's base volume user, copy, and admin space.
     - the size of each domain's CPG user, copy, and admin space.
     - the size of each domain's unmapped space.
     - the total size of each domain.

Viewing Domains for a Single Server

The **Domains** screen provides summary and detail information for an InServ Storage Server's domains.

To access the **Domain** screen:

1. Click **Security** in the Manager Pane.
2. In the Security Management Tree, select the **Domains** node for the system whose users you wish to view.

   The **Domains** screen is displayed in the Management Window and provides a **Summary** tab (default) and a **Domains** tab.

See also:

Manager Pane

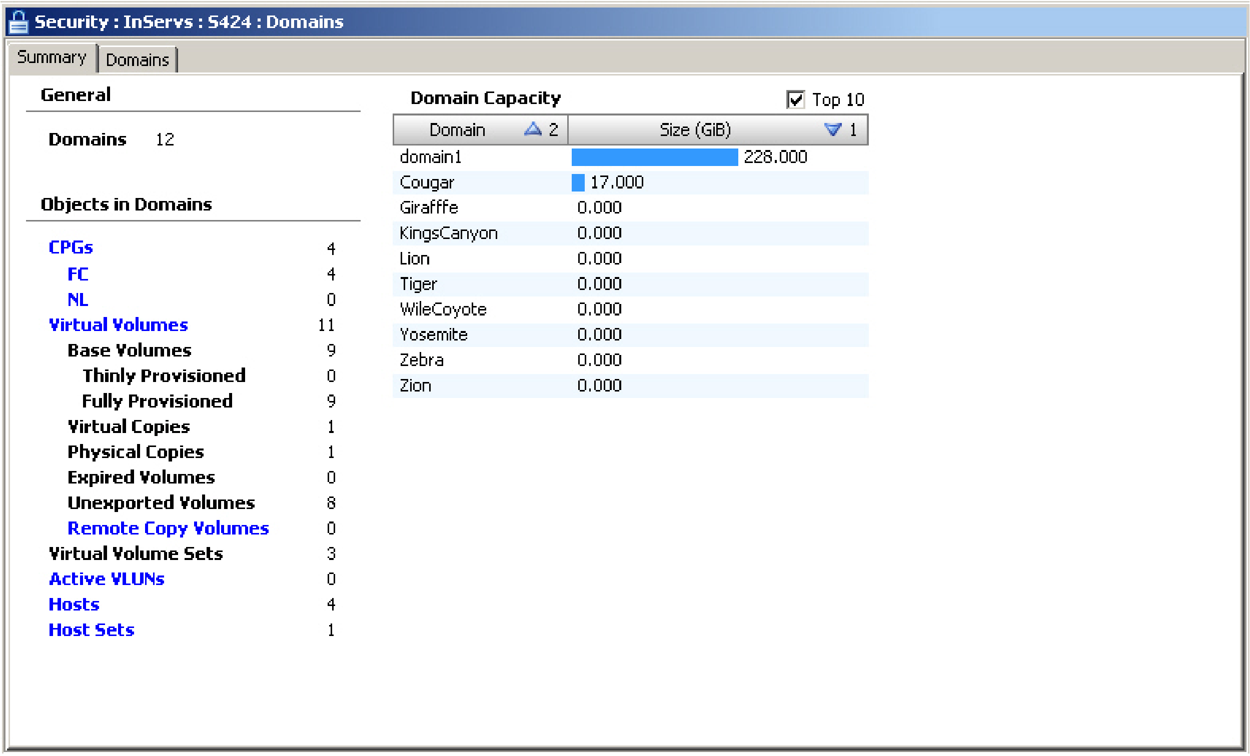
Management Tree

Viewing the Domains Summary Tab

Viewing the Domains Tab

Viewing the Domains Summary Tab

After accessing the **Domains** screen, the **Summary** tab is displayed by default. The **Domains Summary** tab displays all objects and capacity information for all system domains (cumulative view). To view information about a single domain, see Viewing the Domains Tab.



General

Domains 12

Objects in Domains

CPGs	4
FC	4
NL	0
Virtual Volumes	11
Base Volumes	9
Thinly Provisioned	0
Fully Provisioned	9
Virtual Copies	1
Physical Copies	1
Expired Volumes	0
Unexported Volumes	8
Remote Copy Volumes	0
Virtual Volume Sets	3
Active VLUNs	0
Hosts	4
Host Sets	1

Domain Capacity ☑ Top 10

Domain △ 2	Size (GiB) ▽ 1
domain1	228.000
Cougar	17.000
Giraffe	0.000
KingsCanyon	0.000
Lion	0.000
Tiger	0.000
WileCoyote	0.000
Yosemite	0.000
Zebra	0.000
Zion	0.000

The **Domains Summary** tab provides the following information:

Group	Field	Description
General	**Domains**	The number of domains residing on the system.
Objects in Domains	**CPGs**	The number of CPGs associated with the domains in the system.
	FC	The number of Fibre Channel objects associated with the domains in the system.
	NL	The number of Near Line objects associated with the domains in the system.
	SSD	The number of Solid State Disks associated with the domains in the system.
	Virtual Volumes	The total number of virtual volumes associated with the domains in the system.
	Base Volumes	The number of base volumes associated with the domains in the system.

	Thinly Provisioned	The number of Thinly Provisioned virtual volumes associated with the domains in the system.
	Fully Provisioned	The number of fully provisioned virtual volumes associated with the domains in the system.
	Virtual Copies	The total number of virtual copies associated with the domains in the system.
	Physical Copies	The total number of virtual copies associated with the domains in the system.
	Expired Volumes	The total number of expired virtual volumes associated with the domains in the system.
	Unexported Volumes	The total number of unexported virtual volumes associated with the domains in the system.
	Remote Copy Volumes	The total number of Remote Copy virtual volumes associated with the domains in the system.
	Virtual Volume Sets	The total number of virtual volumes sets associated with the domains in the system.
	Active VLUNs	The total number of exported virtual volumes associated with the domains in the system.
	Hosts	The total number of hosts associated with the domains in the system.
	Host Sets	The total number of host sets associated with the domains in the system.
Domain Capacity	**Domain**	The name of the domain.
	Size	The size (in GiB) of the selected domain.
	Top 10	ChecKiBox. Selecting this option results in the display of the ten domains in the system with the greatest capacity.

Viewing the Domains Tab

After accessing the **Domains** screen, the **Summary** tab is displayed by default.

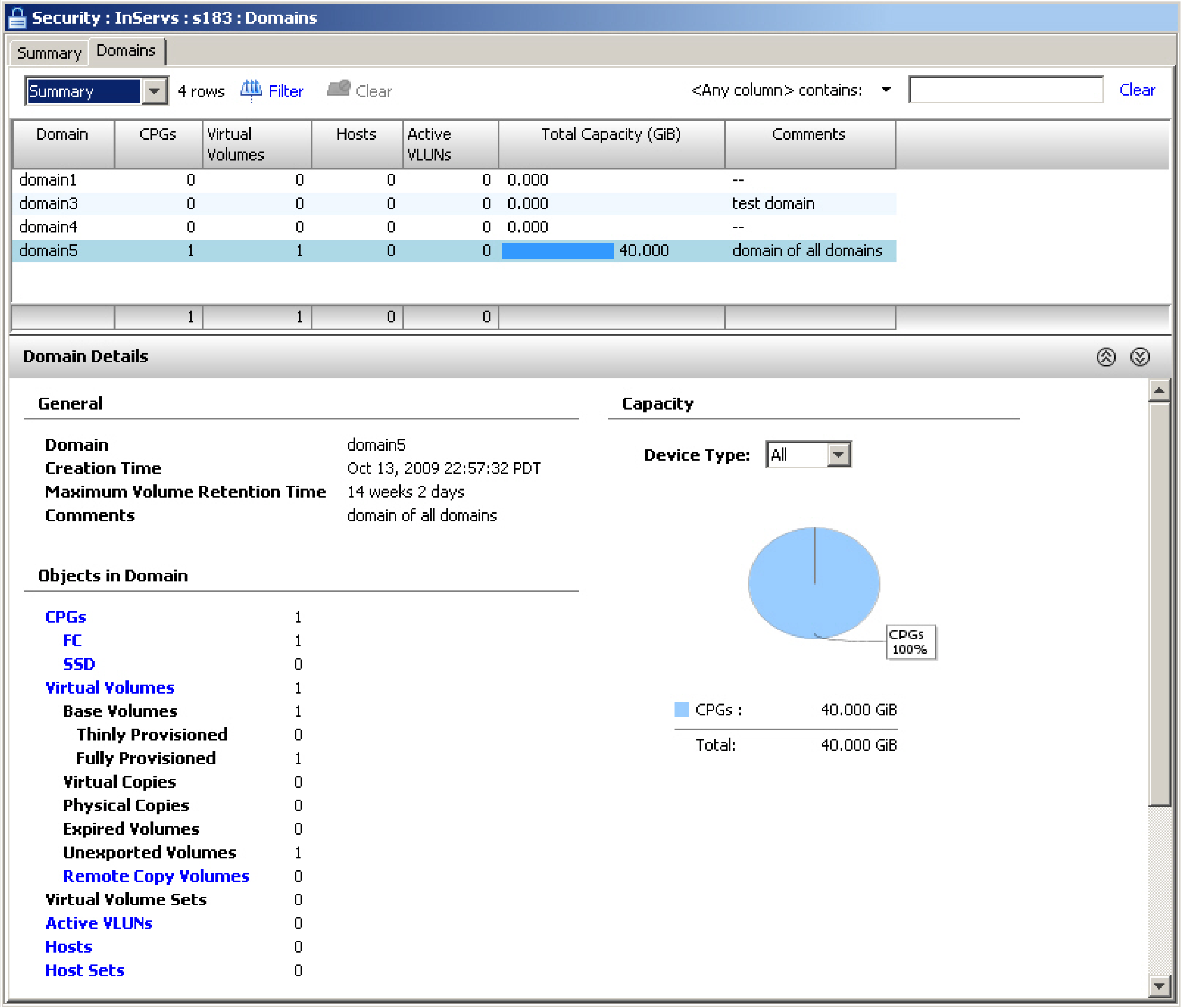
➡Click the **Domains** tab to view its contents.

The **Domains** tab is divided into an upper and lower pane. The upper pane can be filtered to display summary or capacity information. The lower pane displays the details of items selected in the upper pane.

- Summary Information
- Capacity Information

Summary Information

➡To display summary information on the **Domains** tab, select **Summary** from the view list.



Domain	CPGs	Virtual Volumes	Hosts	Active VLUNs	Total Capacity (GiB)	Comments
domain1	0	0	0	0	0.000	--
domain3	0	0	0	0	0.000	test domain
domain4	0	0	0	0	0.000	--
domain5	1	1	0	0	40.000	domain of all domains
	1	1	0	0		

Domain Details

General

Domain	domain5
Creation Time	Oct 13, 2009 22:57:32 PDT
Maximum Volume Retention Time	14 weeks 2 days
Comments	domain of all domains

Objects in Domain

CPGs	1
FC	1
SSD	0
Virtual Volumes	1
Base Volumes	1
Thinly Provisioned	0
Fully Provisioned	1
Virtual Copies	0
Physical Copies	0
Expired Volumes	0
Unexported Volumes	1
Remote Copy Volumes	0
Virtual Volume Sets	0
Active VLUNs	0
Hosts	0
Host Sets	0

Capacity

Device Type: All

🟦 CPGs :	40.000 GiB
Total:	40.000 GiB

The upper pane displays the following information:

Column	Description
Domain	The domain name.
CPGs	The total number of CPGs associated with the domain.
Virtual Volumes	The total number of virtual volumes associated with the domain.
Hosts	The total number of hosts associated with the domain.
Active VLUNs	The total number of exported virtual volumes associated with the domain.
Total Capacity	The total capacity (in GiB) of the domain.
Comments	Any user entered notes when the domain was created.

The lower pane displays the following information:

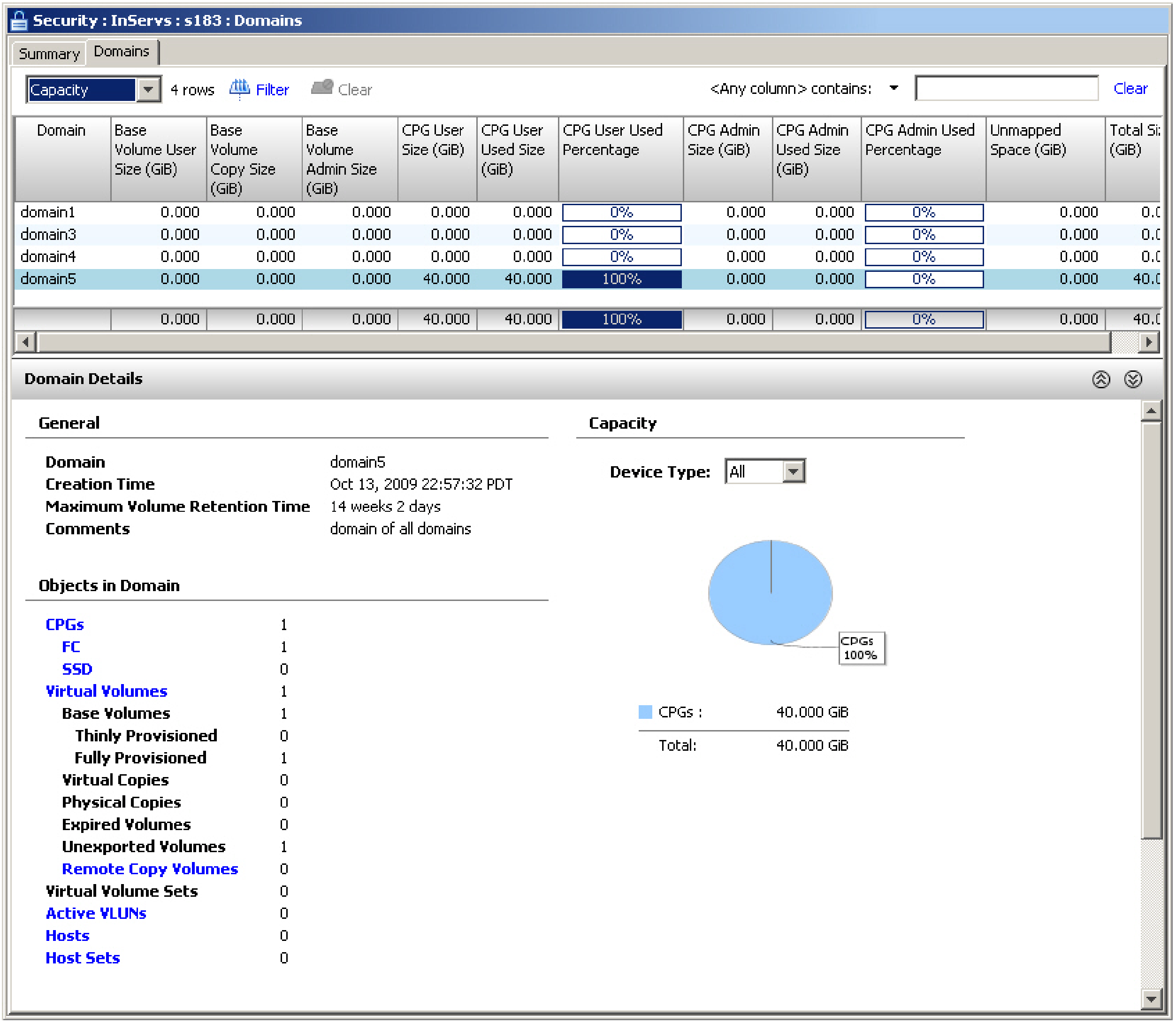
Group	Field	Description
General	**Domain**	The domain name.
	Creation Time	The date and time the domain was created.
	Maximum Volume Retention Time	The maximum time a volume will be retained in the domain.
	Comments	Any user-entered notes during the creation of the domain.
Objects in Domains	The information in the **Objects in Domains** group is identical to the information displayed in the **Objects in Domains** group of the Domains Summary Tab, except the information listed here is per selected domain, rather than per all system domains (cumulative).	
Capacity	**Device Type**	List. Select the device type, Fibre Channel (**FC**), NearLine (**NL**), or Solid State Disk (**SSD**), for which the capacity chart is displayed.

See also:

Viewing the Domains Summary Tab

Capacity Information

➡To display capacity information on the **Domains** tab, select **Capacity** from the view list.



Domain	Base Volume User Size (GiB)	Base Volume Copy Size (GiB)	Base Volume Admin Size (GiB)	CPG User Size (GiB)	CPG User Used Size (GiB)	CPG User Used Percentage	CPG Admin Size (GiB)	CPG Admin Used Size (GiB)	CPG Admin Used Percentage	Unmapped Space (GiB)	Total Si (GiB)
domain1	0.000	0.000	0.000	0.000	0.000	0%	0.000	0.000	0%	0.000	0.
domain3	0.000	0.000	0.000	0.000	0.000	0%	0.000	0.000	0%	0.000	0.
domain4	0.000	0.000	0.000	0.000	0.000	0%	0.000	0.000	0%	0.000	0.
domain5	0.000	0.000	0.000	40.000	40.000	100%	0.000	0.000	0%	0.000	40.
	0.000	0.000	0.000	40.000	40.000	100%	0.000	0.000	0%	0.000	40.

General

Domain	domain5
Creation Time	Oct 13, 2009 22:57:32 PDT
Maximum Volume Retention Time	14 weeks 2 days
Comments	domain of all domains

Objects in Domain

CPGs	1
FC	1
SSD	0
Virtual Volumes	1
Base Volumes	1
Thinly Provisioned	0
Fully Provisioned	1
Virtual Copies	0
Physical Copies	0
Expired Volumes	0
Unexported Volumes	1
Remote Copy Volumes	0
Virtual Volume Sets	0
Active VLUNs	0
Hosts	0
Host Sets	0

Capacity

Device Type: All

CPGs :	40.000 GiB
Total:	40.000 GiB

The upper pane displays the following information:

Column	Description
Domain	The domain name.
Base Volume User Size	The size (in GiB) of the base volume's user space.
Base Volume Copy Size	The size (in GiB) of the base volume's copy space.
Base Volume Admin Size	The size (in GiB) of the base volume's admin space.

CPG User Size	The size (in GiB) of the Common Provisioning Group's (CPG's) user space.
CPG User Used Size	The size (in GiB) of the CPG's used user space.
CPG User Used Percentage	The percentage of the CPG's used user space.
CPG Admin Size	The size (in GiB) of the CPG's admin space.
CPG Admin Used Size	The size (in GiB) of the CPG's used admin space.
CPG Admin Used Percentage	The percentage of the CPG's used admin space.
Unmapped Space	The size (in GiB) of unmapped space.
Total Size	The total size (in GiB) of the domain.

The lower pane displays the same information as the lower pane of the Summary Information screen.

Creating Domains

To create a domain, access the **Create Domain** wizard:

1. Click **Security** in the Manager Pane.
2. Click **Create Domain** in the Common Actions Panel.

   The **Create Domain** wizard appears.

3. Select a storage server on which the domain will be created from the **InServs** list.
4. Enter a domain name.
5. (Optional) Select whether to impose a **Maximum Volume Retention Time**.

   The default retention time is 14 days.

   a. If you wish to change the retention time, click **Override System**.
   b. Select **Days** or **Hours**.
   c. Enter a retention time: **1** to **1,825** for **Days**, **1** to **43,800** for **Hours**.

6. Enter any notes in the Comments field.
7. Click **Add**.

The new domain appears in the **Domains** list.

8. Repeat steps 3 through 7 if you wish to create additional domains.
9. Click **OK**.

See also:

Manager Pane

Common Actions Panel

Viewing Domains

Editing Domains

Creating Domain Sets

Removing Domains

Editing Domains

To edit an existing domain, access the **Edit Domain** wizard:

1. Click **Security** in the Manager Pane.
2. From the Management Tree, select the **Domain** node under the system in which the domain resides.
3. In the **Domains** screen, click the **Domains** tab.
4. Right-click the domain you wish to edit and then click **Edit**.

   The **Edit Domain** wizard appears.

5. Enter a new domain name.
6. (Optional) Select whether to impose a **Maximum Volume Retention Time**.

   The default retention time is 14 days.

   a. If you wish to change the retention time, click **Override System**.
   b. Select **Days** or **Hours**.
   c. Enter a retention time: **1** to **1,825** for **Days**, **1** to **43,800** for **Hours**.

7. Enter any notes in the Comments field.
8. Click **OK**.

See also:

Manager Pane

Common Actions Panel

Viewing Domains

Viewing the Domains Tab

Creating Domains

Creating Domain Sets

Removing Domains

Removing Domains

To remove an existing domain:

1. Click **Security** in the Manager Pane.
2. From the Management Tree, select the **Domain** node under the system in which the domain resides.
3. In the **Domains** screen, click the **Domains** tab.
4. Right-click the domain you wish to remove.

Note: If you wish to remove multiple domains (see Selecting Multiple Items), select the domains you wish to remove before right-clicking.

5. Click **Remove**.
6. In the **Remove Domain** dialog box, click **OK**.

See also:

Manager Pane

Management Tree

Selecting Multiple Items

Viewing Domains

Viewing the Domains Tab

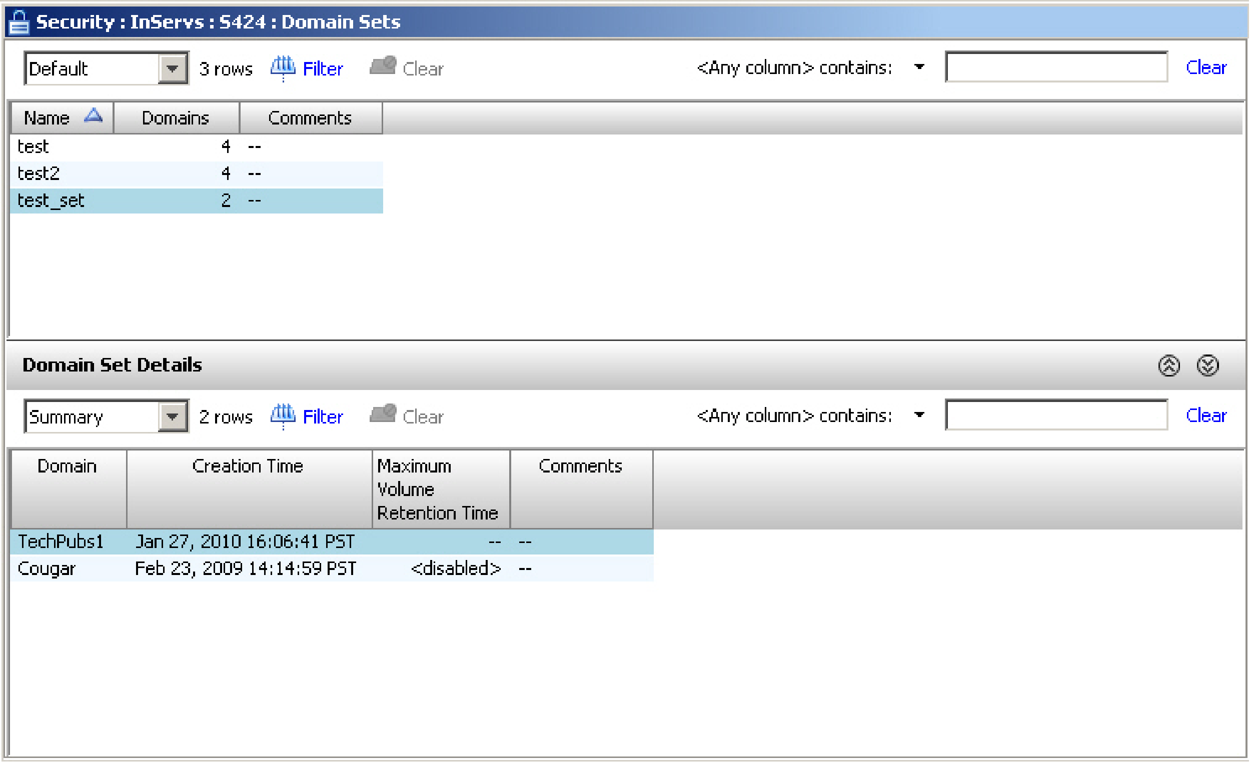
Viewing Domain Sets

To view information about domain sets residing in a system:

1. Click **Security** in the Manager Pane.
2. From the Management Tree, select the **Domain Sets** node under the system in where domain sets reside.

   The **Domain Sets** screen appears.

The **Domain Sets** screen is divided into an upper pane, which displays a summary of all domain sets in the system, and a lower pane, which displays detail information about a selected domain set from the upper pane.


Security : InServs : S424 : Domain Sets
Default
3 rows
Filter
Clear
<Any column> contains:
Clear
Domain Set Details
Summary
2 rows
Filter
Clear
<Any column> contains:
Clear

Name	Domains	Comments
test	4	--
test2	4	--
test_set	2	--

Domain	Creation Time	Maximum Volume Retention Time	Comments
TechPubs1	Jan 27, 2010 16:06:41 PST	--	--
Cougar	Feb 23, 2009 14:14:59 PST	<disabled>	--

The upper pane of the Domain Sets screen provides the following information:

Column	Description
Name	The name of the domain set.
Domains	The number of domains belonging to the domain set.
Comments	Any user entered notes when the domain set was created.

The lower pane of the Domain Sets screen provides details about the selected domain set in the upper pane:

Column	Description
Domain	The name domains belonging to the selected domain set.
Creation Time	The date and time the domain was created.
Maximum Volume Retention Time	The domain's maximum volume retention time (if any).
Comments	Any user entered notes when the domain was created.

See also:

- Creating Domain Sets
- Editing Domain Sets
- Removing Domain Sets
- Viewing Domains
- Management Tree
- Manager Pane

Creating Domain Sets

To create a domain set, access the **Create Domain Set** wizard:

1. Click **Security** in the Manager Pane.
2. Click **Create Domain Set** in the Common Actions Panel.

   The **Create Domain Set** wizard appears.

Step 1. General

1. Select a storage server on which the domain set will be created from the **System** list.
2. Enter a domain set name.
3. (Optional) Enter any notes in the **Comments** field.
4. Click **Next**.

Step 2. Domains

1. From the **Available** list, select the domains you wish to add to the domain set.

Note: You can select multiple domains at one time to add to the domain set (see Selecting Multiple Items).

2. Click the down arrow to move the selected domains to the **Assigned** list.
3. Click **Next** to view summary information, or click **Finish**.

Step 3. Summary

➡Review the summary information. When satisfied, click **Finish**.

See also:

- Manager Pane
- Common Actions Panel
- Selecting Multiple Items
- Viewing Domains
- Viewing Domain Sets

Editing Domain Sets

To edit an existing domain set, access the **Edit Domain Set** wizard:

1. Click **Security** in the Manager Pane.
2. From the Management Tree, select the **Domain Sets** node under the system in which the domain set resides.
3. In the **Domains Sets** screen right-click the domain set you wish to edit.

   The **Edit Domain Sets** wizard appears.

Step 1. General

1. Enter a new domain set name.
2. (Optional) Enter any notes in the **Comments** field.
3. Click **Next**.

Step 2. Domains

1. From the **Available** list, select the domains you wish to add to the domain set.

> **Note:** You can select multiple domains at one time to add to the domain set (see Selecting Multiple Items).

2. Click the down arrow to move the selected domains to the **Assigned** list.
3. From the **Assigned** list, select the domains you wish to remove from the domain set.
4. Click the up arrow to move the selected domains to the **Available** list.
5. Click **Next** to view summary information, or click **Finish**.

Step 3. Summary

➡Review the summary information. When satisfied, click **Finish**.

See also:

Manager Pane

Common Actions Panel

Selecting Multiple Items

Viewing Domains Sets

Removing Domain Sets

To remove an existing domain set:

1. Click **Security** in the Manager Pane.
2. From the Management Tree, select the **Domain Sets** node under the system in which the domain set resides.
3. In the **Domains Sets** screen right-click the domain set you wish to remove.

> **Note:** If you wish to remove multiple domain sets (see Selecting Multiple Items), select the domain sets you wish to remove before right-clicking.

5. Click **Remove**.

6. In the **Remove Domain Sets** dialog box, click **OK**.

See also:

- Manager Pane
- Management Tree
- Selecting Multiple Items
- Viewing Domains Sets

Moving Objects from One Domain to Another Domain

To move objects from one domain to another domain, access the **Move to Domain** wizard:

1. Click **Security** in the Manager Pane.
2. Click **Move to Domain** in the Common Actions Panel.

   The **Move to Domain** wizard appears.

Step 1. General

1. From the **Systems** list, select the system to which objects will be moved.
2. From the **Source Domain** list, select the domain on which the object to be moved currently resides.
3. From the **Destination Domain** list, select the domain to which the object will be moved.
4. From the **Type** list, select the type of object (**Host**, **CPG**, or **Virtual Volume**) to be moved.
5. From the **Object** list, select the object to be moved.
6. Click **Next**.

Step 2. Associated Objects

All objects (Hosts, CPGs, Virtual Volumes, and Virtual Volumes Sets) associated with the selected object, which will be affected by the domain move, are displayed.

➜Review the summary information. When satisfied, click **Finish**.

See also:

- Manager Pane
- Common Actions Panel
- Viewing Domains

Working with Connections

The InForm Management Console allows you to view and remove user connections.

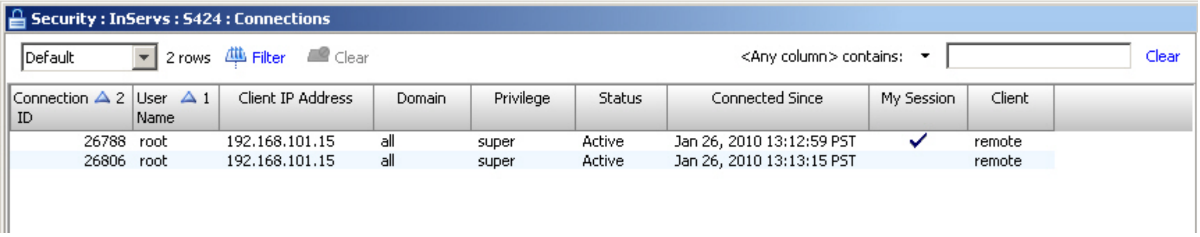
- Viewing User Connections
- Removing User Connections

Viewing User Connections

To view user connections:

1. Click **Security** in the Manager Pane.
2. From the Management Tree, select the **Connections** node under the system in which the domain resides.

   The **Connections** screen appears.



Connection ID ▵ 2	User Name ▵ 1	Client IP Address	Domain	Privilege	Status	Connected Since	My Session	Client
26788	root	192.168.101.15	all	super	Active	Jan 26, 2010 13:12:59 PST	✓	remote
26806	root	192.168.101.15	all	super	Active	Jan 26, 2010 13:13:15 PST		remote

The **Connections** screen provides the following information:

Column	Description
Connection ID	The InServ Storage Server ID.
User Name	The user name.

Client IP Address	The IP address where the connection exists.
Domain	The domain to which the user belongs.
Privilege	The user's domain privilege level (**super**, **edit**, **browse**).
Status	The user status on the InServ Storage Server; either **Active** or **Inactive**.
Connected Since	The connection duration since the displayed date and time.
My Session	Indicates with a check mark the connection for the current running IMC instance.
Client	Indicates if the client is **local** or **remote**.

See also:

Manager Pane

Management Tree

Viewing Users

Removing Users Connections

Removing User Connections

To remove a user connection:

1. Click **Security** in the Manager Pane.
2. From the Management Tree, select the **Connections** node under the system in which the domain resides.
3. In the **Connections** screen, right-click the connection you wish to remove.

Note: If you wish to remove multiple connections (see Selecting Multiple Items), select the connections you wish to remove before right-clicking.

4. Click **Remove User Connection**.
5. In the **Remove User Connection** dialog box, click **OK**.

See also:

- Manager Pane
- Management Tree
- Viewing User Connections

Working with the Hardware Inventory Manager

The **Hardware Inventory Manager** provides information about all hardware used in the connected InServ Storage Servers.

The **Hardware Inventory** screen provides four tabs: **Summary**, **Node Subsystems**, **Cage Subsystems**, and All. These tabs are discussed further in the following topics:

- Viewing the Summary Tab
- Viewing the Node Subsystems Tab
- Viewing the Cage Subsystems Tab
- Viewing the All Tab

To access the **Hardware Inventory** screen:

1. Click **Hardware Inventory** in the Manager Pane.
2. From the Management Tree, select either the **InServs** node to view the hardware inventory for all connected InServ Storage Servers, or select one of InServ Storage Server nodes (for example **S424**) to view hardware inventory for that server.

See also:

- Manager Pane
- Management Tree

Viewing the Hardware Inventory Summary Tab

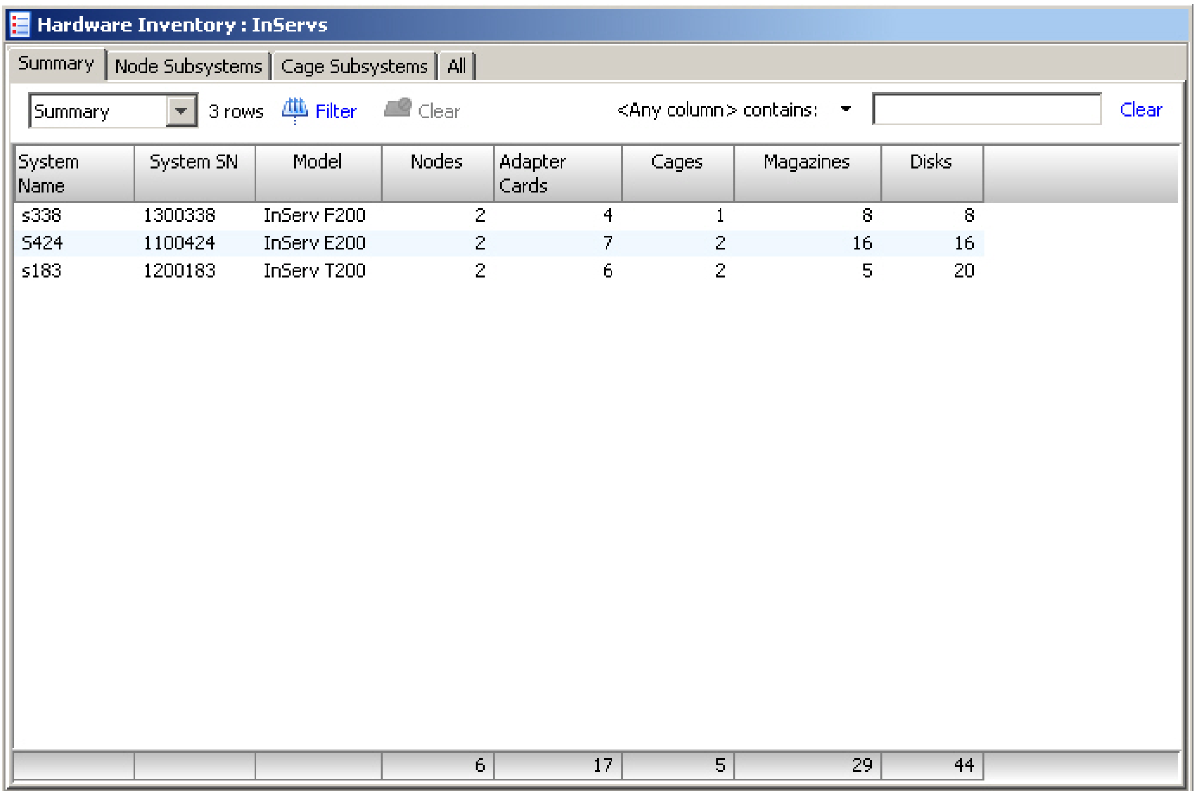
The **Hardware Inventory Summary** tab provides quick summary information about hardware used in all connected InServ Storage Servers.

To access the **Hardware Inventory Summary** tab;

1. Click **Hardware Inventory** in the Manager Pane.
2. In the Management Tree, select the **InServs** node.

The **Hardware Inventory Summary** tab appears in the Management Window.

Note: The **Hardware Inventory Summary** tab is only available if the **InServs** node is selected in the Management Tree.


Hardware Inventory : InServs
Summary
Node Subsystems
Cage Subsystems
All
Summary
3 rows
Filter
Clear
<Any column> contains:
Clear

System Name	System SN	Model	Nodes	Adapter Cards	Cages	Magazines	Disks
s338	1300338	InServ F200	2	4	1	8	8
S424	1100424	InServ E200	2	7	2	16	16
s183	1200183	InServ T200	2	6	2	5	20
			6	17	5	29	44

The **Hardware Inventory Summary** tab provides the following information:

Column	Description

System Name	The system name.
System SN	The system serial number.
Model	The InServ Storage Server model type.
Nodes	The number of controller nodes in the system.
Adapter Cards	The number of adapter cards in the system.
Cages	The number of drive cages in the system.
Magazines	The number of drive magazines in the system.
Disks	The number of disk drives in the system.

See also:

- Manager Pane
- Management Tree
- Management Window

Viewing the Node Subsystems Tab

The **Hardware Inventory Node Subsystems** tab provides information about controller node components. The information is included on eight additional tabs, which are discussed in the following topics:

- Viewing the Node Subsystems Controller Nodes Tab
- Viewing the Node Subsystems CPUs Tab
- Viewing the Node Subsystems Internal Drives Tab
- Viewing the Node Subsystems Physical Memory Tab
- Viewing the Node Subsystems Adapter Cards Tab
- Viewing the Node Subsystems SFPs Tab
- Viewing the Node Subsystems Power Supplies Tab
- Viewing the Node Subsystems Batteries Tab

To access the **Hardware Inventory Node Subsystems** tab:

1. Click **Hardware Inventory** in the Manager Pane.
2. In the Management Tree, select the **InServs** node, or select a specific system node (for example, **s424**).
3. In the Management Window, click the **Node Subsystems** tab.

> **Note:** In the following topics, each subsystem tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. The resulting depicted screen output display data for all connected systems.

See also:

Manager Pane

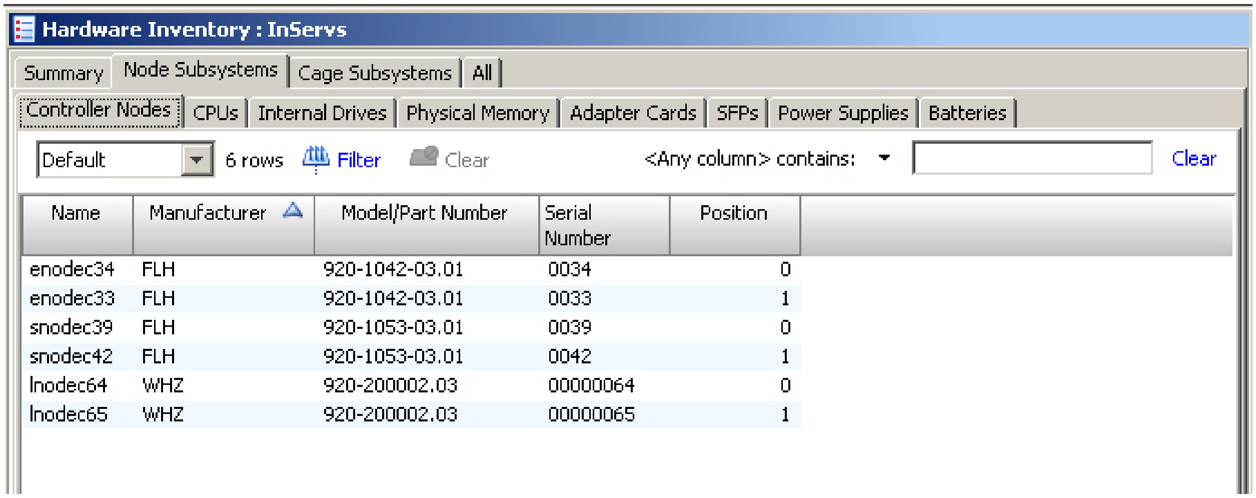
Management Tree

Management Window

Viewing the Node Subsystems Controller Nodes Tab

The **Node Subsystems Controller Nodes** tab displays information about the system's controller node pairs.

➡To access the **Node Subsystems Controller Nodes** tab, click the **Controller Nodes** tab after accessing the **Node Subsystem** tab.


Hardware Inventory : InServs
Summary
Node Subsystems
Cage Subsystems
All
Controller Nodes
CPUs
Internal Drives
Physical Memory
Adapter Cards
SFPs
Power Supplies
Batteries
Default
6 rows
Filter
Clear
<Any column> contains:
Clear

Name	Manufacturer	Model/Part Number	Serial Number	Position
enodec34	FLH	920-1042-03.01	0034	0
enodec33	FLH	920-1042-03.01	0033	1
snodec39	FLH	920-1053-03.01	0039	0
snodec42	FLH	920-1053-03.01	0042	1
lnodec64	WHZ	920-200002.03	00000064	0
lnodec65	WHZ	920-200002.03	00000065	1

The **Node Subsystems Controller Nodes** tab displays the following information:

Column	Description
Name	The controller node name.
Manufacturer	The manufacturer of the controller node.
Model/Part Number	The model and/or part number of the controller node.
Serial Number	The controller node serial number.
Position	The position (**0** or **1**) of the controller node in the node chassis.

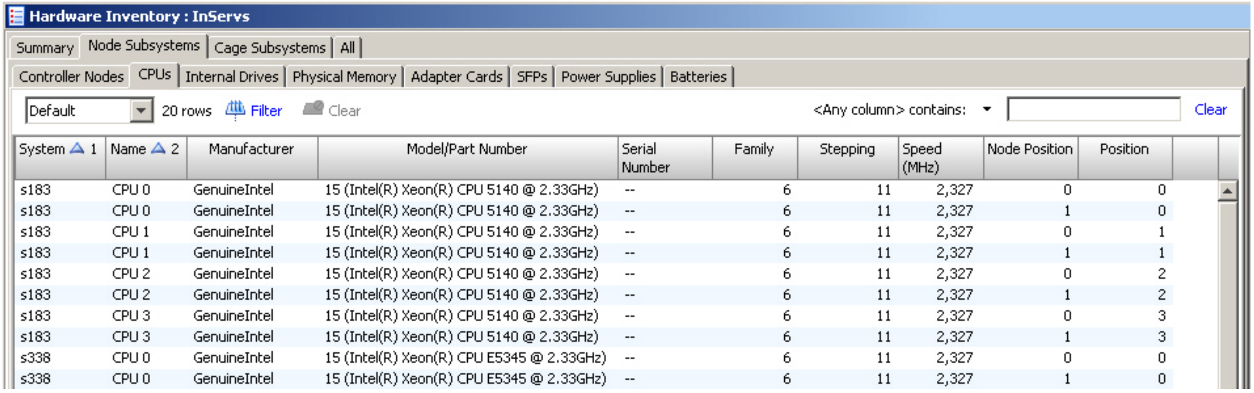
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Node Subsystems Tab

Viewing the Node Subsystems CPUs Tab

The **Node Subsystems CPUs** tab displays information about the system's controller node CPUs.

➡To access the **Node Subsystems CPUs** tab, click the **CPUs** tab after accessing the **Node Subsystem** tab.


Hardware Inventory : InServs
Summary
Node Subsystems
Cage Subsystems
All
Controller Nodes
CPUs
Internal Drives
Physical Memory
Adapter Cards
SFPs
Power Supplies
Batteries
Default
20 rows
Filter
Clear
<Any column> contains:
Clear

System 1	Name 2	Manufacturer	Model/Part Number	Serial Number	Family	Stepping	Speed (MHz)	Node Position	Position
s183	CPU 0	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	6	11	2,327	0	0
s183	CPU 0	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	6	11	2,327	1	0
s183	CPU 1	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	6	11	2,327	0	1
s183	CPU 1	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	6	11	2,327	1	1
s183	CPU 2	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	6	11	2,327	0	2
s183	CPU 2	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	6	11	2,327	1	2
s183	CPU 3	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	6	11	2,327	0	3
s183	CPU 3	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	6	11	2,327	1	3
s338	CPU 0	GenuineIntel	15 (Intel(R) Xeon(R) CPU E5345 @ 2.33GHz)	--	6	11	2,327	0	0
s338	CPU 0	GenuineIntel	15 (Intel(R) Xeon(R) CPU E5345 @ 2.33GHz)	--	6	11	2,327	1	0

Note: In the screen output above, the **CPUs** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **CPUs** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **CPU** tab does not display the **System** column.

The **Node Subsystems CPUs** tab displays the following information:

Column	Description
System	The system on which the CPU resides.
Name	The CPU name.
Manufacturer	The manufacturer of the CPU.
Model/Part Number	The model and/or part number of the CPU.
Serial Number	The CPU's serial number.
Family	The family, as noted by the manufacturer, to which the CPU belongs.
Stepping	The number of design changes, as noted by the manufacturer, to which the CPU has advanced from its original design.

Speed	The speed (in MHz) of the CPU.
Node Position	The position (**0** or **1**) of the controller node in the node chassis.
Position	The position of the CPU (**0**, **1**, **2**, or **3**) in the controller node.

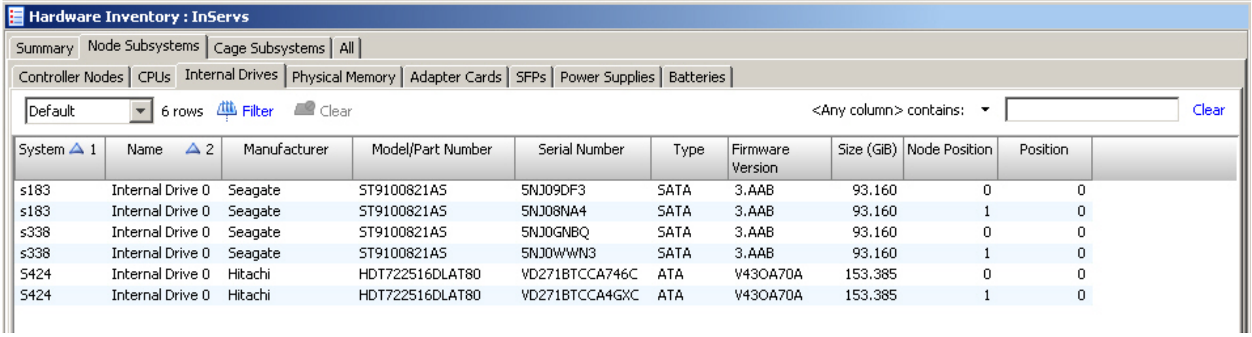
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Node Subsystems Tab

Viewing the Node Subsystems Internal Drives Tab

The **Node Subsystems Internal Dives** tab displays information about the system's controller node internal disk drives.

To access the **Node Subsystems Internal Drives** tab, click the **Internal Drives** tab after accessing the **Node Subsystem** tab.


Hardware Inventory : InServs
Summary
Node Subsystems
Cage Subsystems
All
Controller Nodes
CPUs
Internal Drives
Physical Memory
Adapter Cards
SFPs
Power Supplies
Batteries
Default
6 rows
Filter
Clear
<Any column> contains:
Clear

System ▲ 1	Name ▲ 2	Manufacturer	Model/Part Number	Serial Number	Type	Firmware Version	Size (GiB)	Node Position	Position
s183	Internal Drive 0	Seagate	ST9100821AS	5NJ09DF3	SATA	3.AAB	93.160	0	0
s183	Internal Drive 0	Seagate	ST9100821AS	5NJ08NA4	SATA	3.AAB	93.160	1	0
s338	Internal Drive 0	Seagate	ST9100821AS	5NJ0GNBQ	SATA	3.AAB	93.160	0	0
s338	Internal Drive 0	Seagate	ST9100821AS	5NJ0WWN3	SATA	3.AAB	93.160	1	0
S424	Internal Drive 0	Hitachi	HDT722516DLAT80	VD271BTCCA746C	ATA	V43OA70A	153.385	0	0
S424	Internal Drive 0	Hitachi	HDT722516DLAT80	VD271BTCCA4GXC	ATA	V43OA70A	153.385	1	0

Note: In the screen output above, the **Internal Drives** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **Internal Drives** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **Internal Drives** tab does not display the **System** column.

The **Node Subsystems Internal Drives** tab displays the following information:

Column	Description
System	The system on which the drive resides.
Name	The drive name.
Manufacturer	The manufacturer of the drive.
Model/Part Number	The model and/or part number of the drive.
Serial Number	The drive's serial number.
Type	The type of drive, either **SATA** or **ATA**.
Firmware Version	The drive firmware version.
Size	The size (in GiB) of the drive.
Node Position	The position (**0** or **1**) of the controller node in the node chassis.
Position	The position of the drive in the controller node.

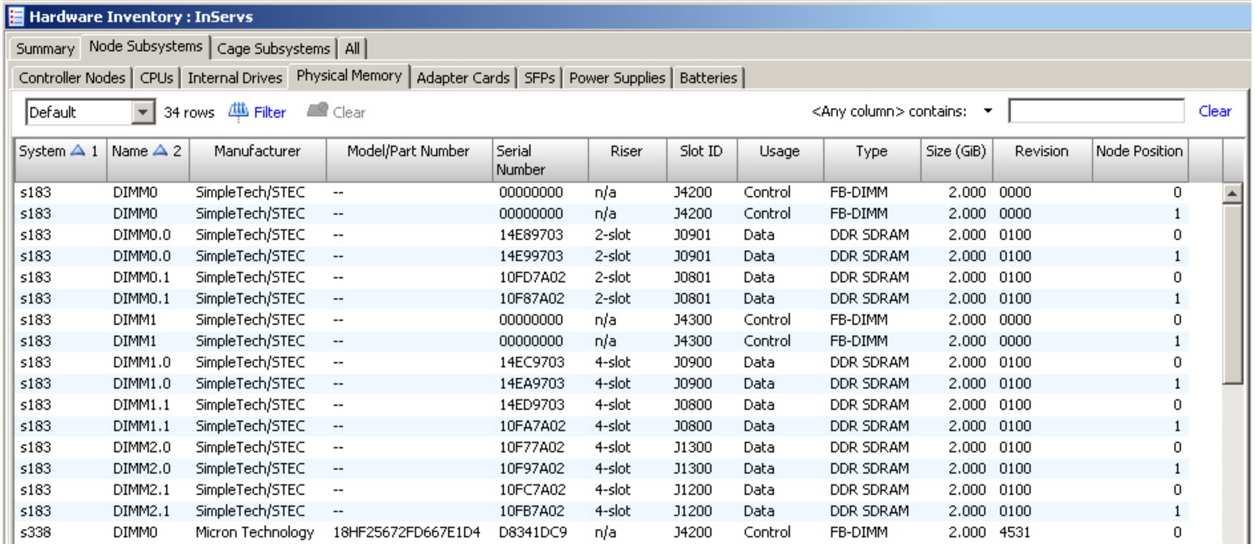
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Node Subsystems Tab

Viewing the Node Subsystems Physical Memory Tab

The **Node Subsystems Physical Memory** tab displays information about the system's physical memory.

To access the **Node Subsystems Physical Memory** tab, click the **Physical Memory** tab after accessing the **Node Subsystem** tab.



System 1	Name 2	Manufacturer	Model/Part Number	Serial Number	Riser	Slot ID	Usage	Type	Size (GiB)	Revision	Node Position
s183	DIMM0	SimpleTech/STEC	--	00000000	n/a	J4200	Control	FB-DIMM	2.000	0000	0
s183	DIMM0	SimpleTech/STEC	--	00000000	n/a	J4200	Control	FB-DIMM	2.000	0000	1
s183	DIMM0.0	SimpleTech/STEC	--	14E89703	2-slot	J0901	Data	DDR SDRAM	2.000	0100	0
s183	DIMM0.0	SimpleTech/STEC	--	14E99703	2-slot	J0901	Data	DDR SDRAM	2.000	0100	1
s183	DIMM0.1	SimpleTech/STEC	--	10FD7A02	2-slot	J0801	Data	DDR SDRAM	2.000	0100	0
s183	DIMM0.1	SimpleTech/STEC	--	10F87A02	2-slot	J0801	Data	DDR SDRAM	2.000	0100	1
s183	DIMM1	SimpleTech/STEC	--	00000000	n/a	J4300	Control	FB-DIMM	2.000	0000	0
s183	DIMM1	SimpleTech/STEC	--	00000000	n/a	J4300	Control	FB-DIMM	2.000	0000	1
s183	DIMM1.0	SimpleTech/STEC	--	14EC9703	4-slot	J0900	Data	DDR SDRAM	2.000	0100	0
s183	DIMM1.0	SimpleTech/STEC	--	14EA9703	4-slot	J0900	Data	DDR SDRAM	2.000	0100	1
s183	DIMM1.1	SimpleTech/STEC	--	14ED9703	4-slot	J0800	Data	DDR SDRAM	2.000	0100	0
s183	DIMM1.1	SimpleTech/STEC	--	10FA7A02	4-slot	J0800	Data	DDR SDRAM	2.000	0100	1
s183	DIMM2.0	SimpleTech/STEC	--	10F77A02	4-slot	J1300	Data	DDR SDRAM	2.000	0100	0
s183	DIMM2.0	SimpleTech/STEC	--	10F97A02	4-slot	J1300	Data	DDR SDRAM	2.000	0100	1
s183	DIMM2.1	SimpleTech/STEC	--	10FC7A02	4-slot	J1200	Data	DDR SDRAM	2.000	0100	0
s183	DIMM2.1	SimpleTech/STEC	--	10FB7A02	4-slot	J1200	Data	DDR SDRAM	2.000	0100	1
s338	DIMM0	Micron Technology	18HF25672FD667E1D4	D8341DC9	n/a	J4200	Control	FB-DIMM	2.000	4531	0

Note: In the screen output above, the **Physical Memory** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **Physical Memory** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **Physical Memory** tab does not display the **System** column.

The **Node Subsystems Physical Memory** tab displays the following information:

Column	Description
System	The system on which the DIMM resides.
Name	The DIMM name.
Manufacturer	The manufacturer of the DIMM.
Model/Part Number	The model and/or part number of the DIMM.

Serial Number	The DIMM's serial number.
Riser	The riser card type on which the DIMM is connected.
Slot ID	The slot in which the DIMM is connected.
Usage	The DIMM's usage, either **Data** cache or **Control** cache.
Type	The type of DIMM, either **FB-DIM** or **DDR SDRAM**.
Size	The size of the DIMM (in GiB).
Revision	The revision level of the DIMM.
Node Position	The position (**0** or **1**) of the controller node in the node chassis.

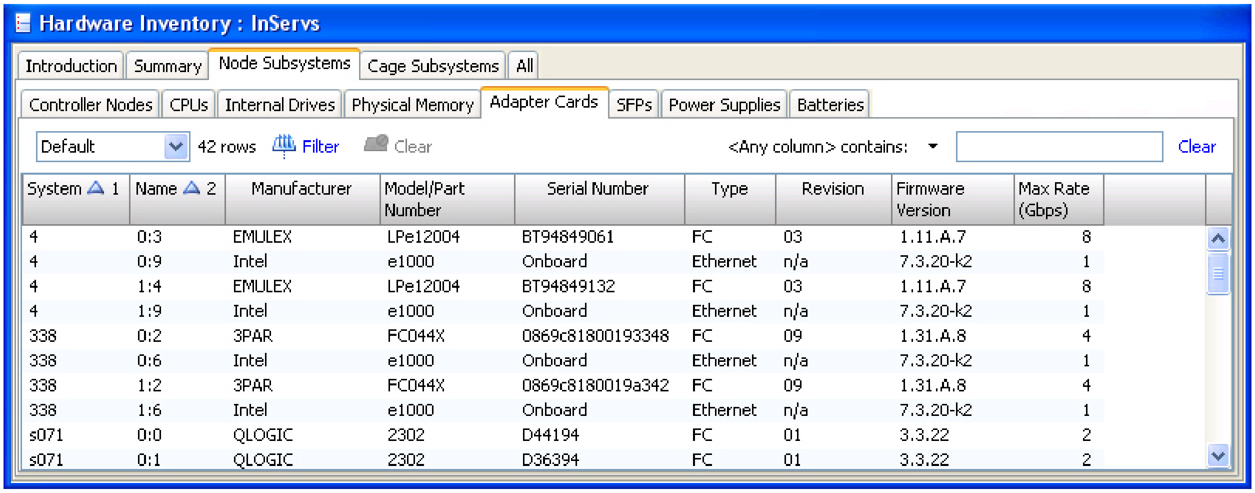
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Node Subsystems Tab

Viewing the Node Subsystems Adapter Cards Tab

The **Node Subsystems Physical Memory** tab displays information about the system's physical memory.

➡To access the **Node Subsystems Physical Memory** tab, click the **Physical Memory** tab after accessing the **Node Subsystem** tab.


Hardware Inventory : InServs
Introduction
Summary
Node Subsystems
Cage Subsystems
All
Controller Nodes
CPUs
Internal Drives
Physical Memory
Adapter Cards
SFPs
Power Supplies
Batteries
Default
42 rows
Filter
Clear
<Any column> contains:
Clear

System △ 1	Name △ 2	Manufacturer	Model/Part Number	Serial Number	Type	Revision	Firmware Version	Max Rate (Gbps)
4	0:3	EMULEX	LPe12004	BT94849061	FC	03	1.11.A.7	8
4	0:9	Intel	e1000	Onboard	Ethernet	n/a	7.3.20-k2	1
4	1:4	EMULEX	LPe12004	BT94849132	FC	03	1.11.A.7	8
4	1:9	Intel	e1000	Onboard	Ethernet	n/a	7.3.20-k2	1
338	0:2	3PAR	FC044X	0869c81800193348	FC	09	1.31.A.8	4
338	0:6	Intel	e1000	Onboard	Ethernet	n/a	7.3.20-k2	1
338	1:2	3PAR	FC044X	0869c8180019a342	FC	09	1.31.A.8	4
338	1:6	Intel	e1000	Onboard	Ethernet	n/a	7.3.20-k2	1
s071	0:0	QLOGIC	2302	D44194	FC	01	3.3.22	2
s071	0:1	QLOGIC	2302	D36394	FC	01	3.3.22	2

Note: In the screen output above, the **Adpater Cards** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **Adapter Cards** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **Adapter Cards** tab does not display the **System** column.

The **Node Subsystems Adapter Cards** tab displays the following information:

Column	Description
System	The system on which the adapter resides.
Name	The adapters name, shown in **node:slot** format.
Manufacturer	The manufacturer of the adapter.
Model/Part Number	The model and/or part number of the adapter.
Serial Number	The adapter's serial number.
Type	The type of adapter, either **FC** (Fibre Channel), **Ethernet**, or **iSCSI.**
Revision	The revision level of the adapter.
Firmware Revision	The firmware revision on the adapter.
Max Rate	The SFP's maximum speed, in Gbps.

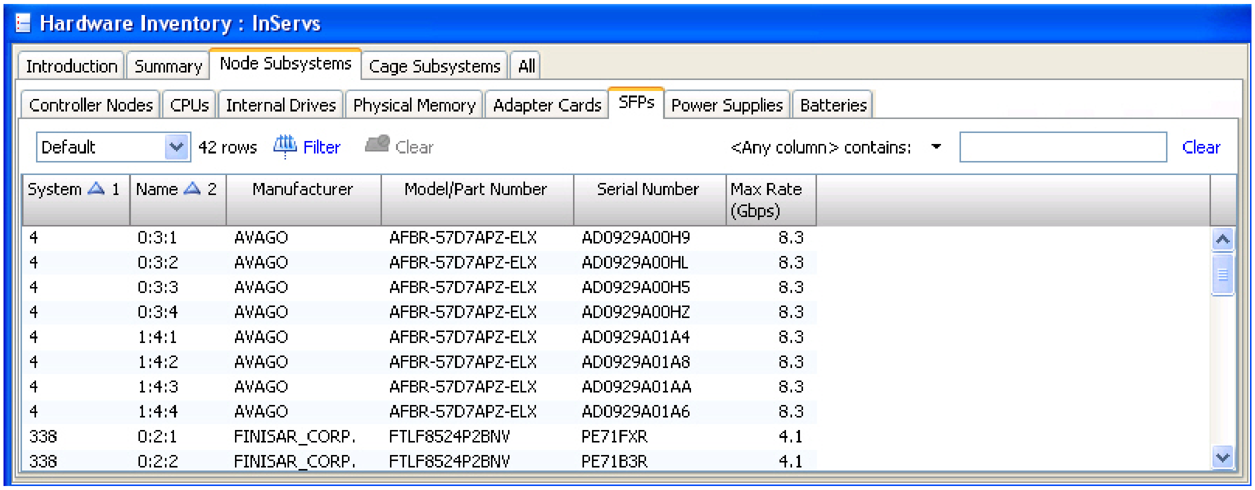
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Node Subsystems Tab

Viewing the Node Subsystems SFPs Tab

The **Node Subsystems SFPs** tab displays information about the system's physical memory.

➜To access the **Node Subsystems SFPs** tab, click the **SFPs** tab after accessing the **Node Subsystem** tab.


Hardware Inventory : InServs
Introduction
Summary
Node Subsystems
Cage Subsystems
All
Controller Nodes
CPUs
Internal Drives
Physical Memory
Adapter Cards
SFPs
Power Supplies
Batteries
Default
42 rows
Filter
Clear
<Any column> contains:
Clear

System 1	Name 2	Manufacturer	Model/Part Number	Serial Number	Max Rate (Gbps)
4	0:3:1	AVAGO	AFBR-57D7APZ-ELX	AD0929A00H9	8.3
4	0:3:2	AVAGO	AFBR-57D7APZ-ELX	AD0929A00HL	8.3
4	0:3:3	AVAGO	AFBR-57D7APZ-ELX	AD0929A00H5	8.3
4	0:3:4	AVAGO	AFBR-57D7APZ-ELX	AD0929A00HZ	8.3
4	1:4:1	AVAGO	AFBR-57D7APZ-ELX	AD0929A01A4	8.3
4	1:4:2	AVAGO	AFBR-57D7APZ-ELX	AD0929A01A8	8.3
4	1:4:3	AVAGO	AFBR-57D7APZ-ELX	AD0929A01AA	8.3
4	1:4:4	AVAGO	AFBR-57D7APZ-ELX	AD0929A01A6	8.3
338	0:2:1	FINISAR_CORP.	FTLF8524P2BNV	PE71FXR	4.1
338	0:2:2	FINISAR_CORP.	FTLF8524P2BNV	PE71B3R	4.1

Note: In the screen output above, the **SFPs** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **SFPs** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **SFPs** tab does not display the **System** column.

The **Node Subsystems SFPs** tab displays the following information:

Column	Description
System	The system on which the SFP resides.

Name	The SFP's name, shown in **node:slot:port** format.
Manufacturer	The manufacturer of the SFP.
Model/Part Number	The model and/or part number of the SFP.
Serial Number	The SFP's serial number.
Max Rate	The maximum rate (in Gbps) of the SFP.

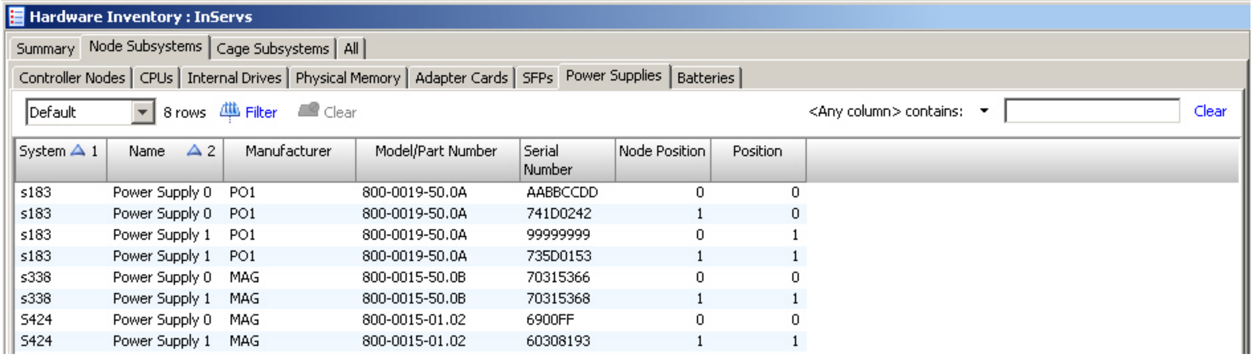
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Node Subsystems Tab

Viewing the Node Subsystems Power Supplies Tab

The **Node Subsystems Power Supplies** tab displays information about the system's physical memory.

➜To access the **Node Subsystems Power Supplies** tab, click the **Power Supplies** tab after accessing the **Node Subsystem** tab.


Hardware Inventory : InServs
Summary
Node Subsystems
Cage Subsystems
All
Controller Nodes
CPUs
Internal Drives
Physical Memory
Adapter Cards
SFPs
Power Supplies
Batteries
Default
8 rows
Filter
Clear
<Any column> contains:
Clear

System 1	Name 2	Manufacturer	Model/Part Number	Serial Number	Node Position	Position
s183	Power Supply 0	PO1	800-0019-50.0A	AABBCCDD	0	0
s183	Power Supply 0	PO1	800-0019-50.0A	741D0242	1	0
s183	Power Supply 1	PO1	800-0019-50.0A	99999999	0	1
s183	Power Supply 1	PO1	800-0019-50.0A	735D0153	1	1
s338	Power Supply 0	MAG	800-0015-50.0B	70315366	0	0
s338	Power Supply 1	MAG	800-0015-50.0B	70315368	1	1
S424	Power Supply 0	MAG	800-0015-01.02	6900FF	0	0
S424	Power Supply 1	MAG	800-0015-01.02	60308193	1	1

Note: In the screen output above, the **Power Supplies** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **Power Supplies** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **Power Supplies** tab does not display the **System** column.

The **Node Subsystems Power Supplies** tab displays the following information:

Column	**Description**
System	The system on which the power supply resides.
Name	The power supply's name.
Manufacturer	The manufacturer of the power supply.
Model/Part Number	The model and/or part number of the power supply.
Serial Number	The power supply's serial number.
Node Position	The position (**0** or **1**) of the node in the node chassis.
Position	The position (**0** or **1**) of the power supply in the node chassis.

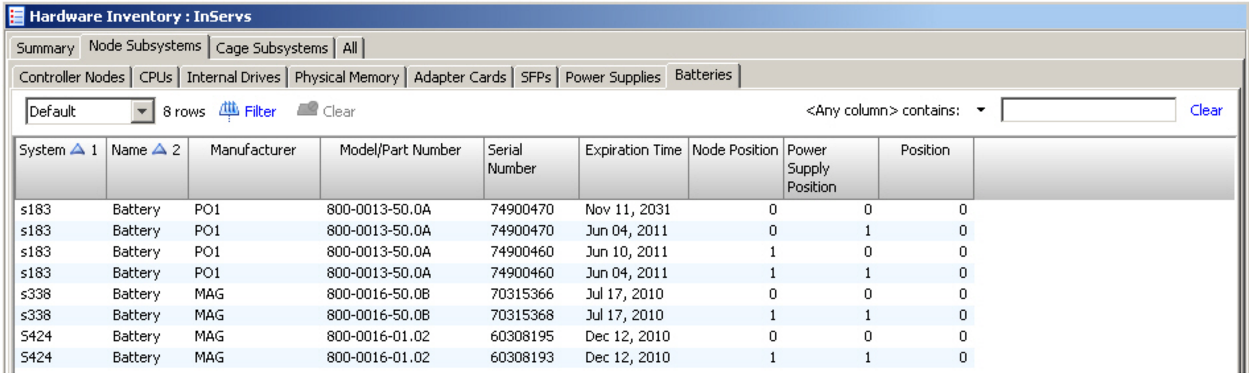
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Node Subsystems Tab

Viewing the Node Subsystems Batteries Tab

The **Node Subsystems Batteries** tab displays information about the system's physical memory.

To access the **Node Subsystems Batteries** tab, click the **Batteries** tab after accessing the **Node Subsystem** tab.


Hardware Inventory : InServs
Summary
Node Subsystems
Cage Subsystems
All
Controller Nodes
CPUs
Internal Drives
Physical Memory
Adapter Cards
SFPs
Power Supplies
Batteries
Default
8 rows
Filter
Clear
<Any column> contains:
Clear

System 1	Name 2	Manufacturer	Model/Part Number	Serial Number	Expiration Time	Node Position	Power Supply Position	Position
s183	Battery	PO1	800-0013-50.0A	74900470	Nov 11, 2031	0	0	0
s183	Battery	PO1	800-0013-50.0A	74900470	Jun 04, 2011	0	1	0
s183	Battery	PO1	800-0013-50.0A	74900460	Jun 10, 2011	1	0	0
s183	Battery	PO1	800-0013-50.0A	74900460	Jun 04, 2011	1	1	0
s338	Battery	MAG	800-0016-50.0B	70315366	Jul 17, 2010	0	0	0
s338	Battery	MAG	800-0016-50.0B	70315368	Jul 17, 2010	1	1	0
S424	Battery	MAG	800-0016-01.02	60308195	Dec 12, 2010	0	0	0
S424	Battery	MAG	800-0016-01.02	60308193	Dec 12, 2010	1	1	0

> **Note:** In the screen output above, the **Batteries** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **Batteries** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **Batteries** tab does not display the **System** column.

The **Node Subsystems Batteries** tab displays the following information:

Column	Description
System	The system on which the battery resides.
Name	The battery's name.
Manufacturer	The manufacturer of the battery.
Model/Part Number	The model and/or part number of the battery.
Serial Number	The battery's serial number.
Expiration Time	The battery's expiration date.
Node Position	The position (**0** or **1**) of the node in the node chassis.

Power Supply Position	The position (**0** or **1**) of the power supply in the node chassis.
Position	The position of the battery in the system.

See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Node Subsystems Tab

Viewing the Cage Subsystems Tab

The **Hardware Inventory Cage Subsystems** tab provides information about system drive cage components. The information is included on six additional tabs, which are discussed in the following topics:

- Viewing the Cage Subsystems Dive Cages Tab
- Viewing the Cage Subsystems Interface Cards Tab
- Viewing the Cage Subsystems SFPs Tab
- Viewing the Cage Subsystems Magazines Tab
- Viewing the Cage Subsystems Physical Disks Tab
- Viewing the Cage Subsystems Power Supplies Tab

To access the **Hardware Inventory Cage Subsystems** tab:

1. Click **Hardware Inventory** in the Manager Pane.
2. In the Management Tree, select the **InServs** node, or select a specific system node (for example, **s424**).
3. In the Management Window, click the **Cage Subsystems** tab.

Note: In the following topics, each subsystem tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. The resulting depicted screen output display data for all connected systems.

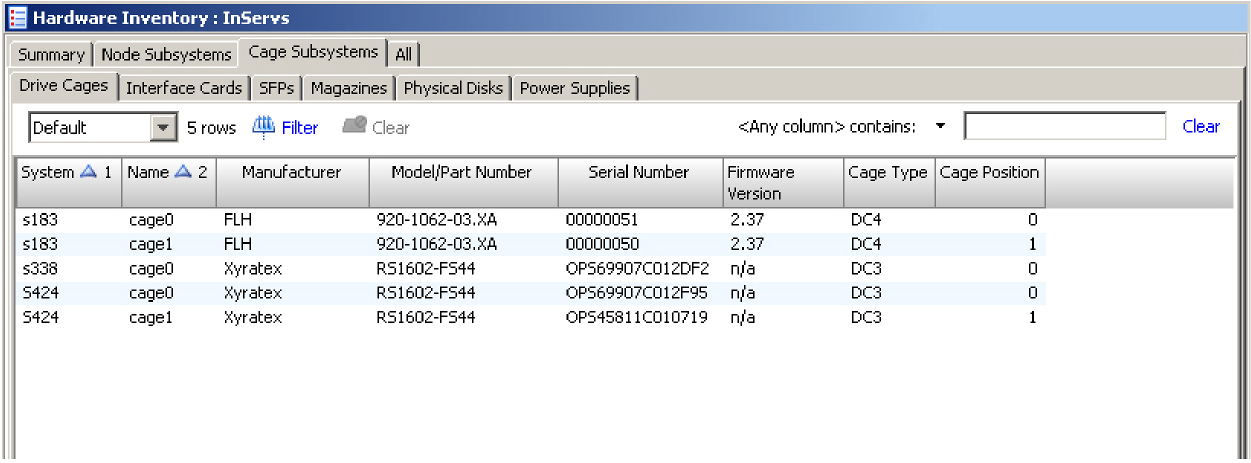
See also:

- [Manager Pane]
- [Management Tree]
- [Management Window]

Viewing the Cage Subsystems Drive Cages Tab

The **Cage Subsystems Drive Cages** tab displays information about the system's drive cages.

To access the **Cage Subsystems Drive Cages** tab, click the **Drive Cages** tab after accessing the **Cage Subsystem** tab.


Hardware Inventory : InServs
Summary
Node Subsystems
Cage Subsystems
All
Drive Cages
Interface Cards
SFPs
Magazines
Physical Disks
Power Supplies
Default
5 rows
Filter
Clear
<Any column> contains:
Clear

System 1	Name 2	Manufacturer	Model/Part Number	Serial Number	Firmware Version	Cage Type	Cage Position
s183	cage0	FLH	920-1062-03.XA	00000051	2.37	DC4	0
s183	cage1	FLH	920-1062-03.XA	00000050	2.37	DC4	1
s338	cage0	Xyratex	RS1602-FS44	OPS69907C012DF2	n/a	DC3	0
S424	cage0	Xyratex	RS1602-FS44	OPS69907C012F95	n/a	DC3	0
S424	cage1	Xyratex	RS1602-FS44	OPS45811C010719	n/a	DC3	1

Note: In the screen output above, the **Drive Cages** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **Drive Cages** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **Drive Cages** tab does not display the **System** column.

The **Cage Subsystems Drive Cages** tab displays the following information:

Column	Description
System	The InServ Storage Server name.
Name	The drive cage name.

Manufacturer	The manufacturer of the drive cage.
Model/Part Number	The model and/or part number of the drive cage.
Serial Number	The drive cage serial number.
Firmware Version	The drive cage firmware version.
Cage Type	The type of drive cage (**DC2**, **DC3**, or **DC4**)
Cage Position	The position (**0** or **1**) of the drive cage in the drive chassis.

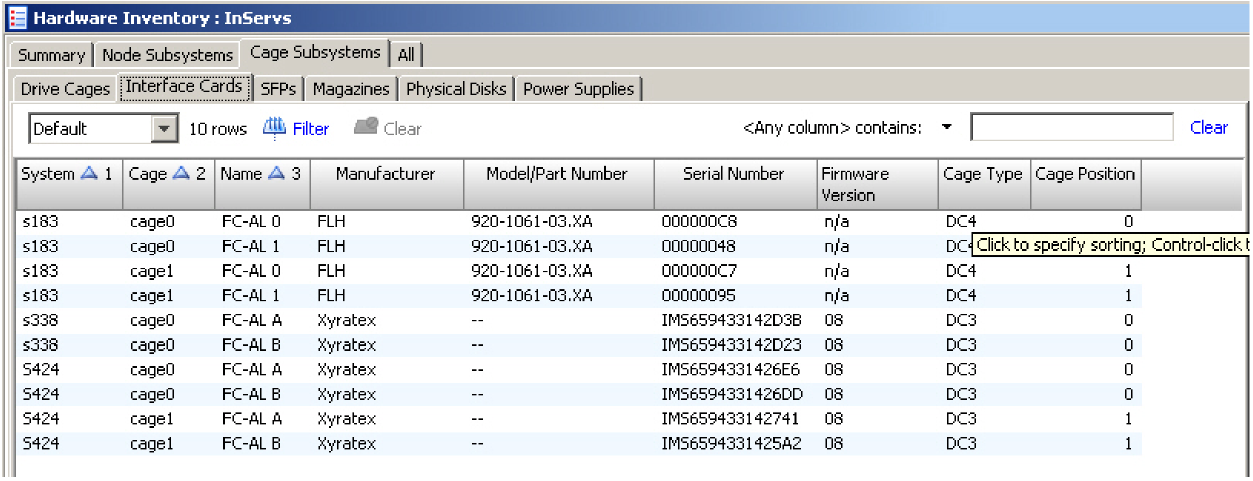
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Cage Subsystems Tab

Viewing the Cage Subsystems Interface Cards Tab

The **Cage Subsystems Interface Cards** tab displays information about the system's interface cards.

➡To access the **Cage Subsystems Interface Cards** tab, click the **Interface Cards** tab after accessing the **Cage Subsystem** tab.


Hardware Inventory : InServs
Summary
Node Subsystems
Cage Subsystems
All
Drive Cages
Interface Cards
SFPs
Magazines
Physical Disks
Power Supplies
Default
10 rows
Filter
Clear
<Any column> contains:
Clear
Click to specify sorting; Control-click t

System 1	Cage 2	Name 3	Manufacturer	Model/Part Number	Serial Number	Firmware Version	Cage Type	Cage Position
s183	cage0	FC-AL 0	FLH	920-1061-03.XA	000000C8	n/a	DC4	0
s183	cage0	FC-AL 1	FLH	920-1061-03.XA	00000048	n/a	DC	
s183	cage1	FC-AL 0	FLH	920-1061-03.XA	000000C7	n/a	DC4	1
s183	cage1	FC-AL 1	FLH	920-1061-03.XA	00000095	n/a	DC4	1
s338	cage0	FC-AL A	Xyratex	--	IMS659433142D3B	08	DC3	0
s338	cage0	FC-AL B	Xyratex	--	IMS659433142D23	08	DC3	0
S424	cage0	FC-AL A	Xyratex	--	IMS6594331426E6	08	DC3	0
S424	cage0	FC-AL B	Xyratex	--	IMS6594331426DD	08	DC3	0
S424	cage1	FC-AL A	Xyratex	--	IMS659433142741	08	DC3	1
S424	cage1	FC-AL B	Xyratex	--	IMS6594331425A2	08	DC3	1

Note: In the screen output above, the **Interface Cards** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **Interface Cards** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **Interface Cards** tab does not display the **System** column.

The **Cage Subsystems Interface Cards** tab displays the following information:

Column	Description
System	The InServ Storage Server name.
Cage	The drive cage in which the interface card resides.
Name	The interface card name.
Manufacturer	The manufacturer of the interface card.
Model/Part Number	The model and/or part number of the interface card.
Serial Number	The interface card serial number.
Firmware Version	The interface card firmware version.
Cage Type	The type of drive cage (**DC2**, **DC3**, or **DC4**)
Cage Position	The position (**0** or **1**) of the drive cage in the drive chassis.

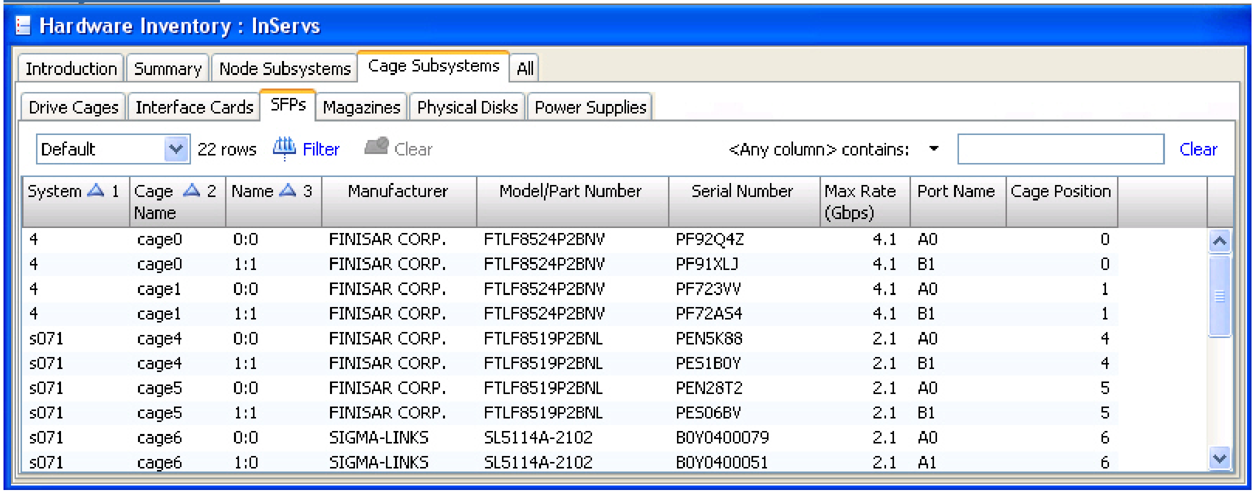
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Cage Subsystems Tab

Viewing the Cage Subsystems SFPs Tab

The **Cage Subsystems SFPs** tab displays information about the system's SFPs.

➜To access the **Cage Subsystems SFPs** tab, click the **SFPs** tab after [accessing the **Cage Subsystem** tab].


Hardware Inventory : InServs
Introduction
Summary
Node Subsystems
Cage Subsystems
All
Drive Cages
Interface Cards
SFPs
Magazines
Physical Disks
Power Supplies
Default
22 rows
Filter
Clear
<Any column> contains:
Clear

System 1	Cage Name 2	Name 3	Manufacturer	Model/Part Number	Serial Number	Max Rate (Gbps)	Port Name	Cage Position
4	cage0	0:0	FINISAR CORP.	FTLF8524P2BNV	PF92Q4Z	4.1	A0	0
4	cage0	1:1	FINISAR CORP.	FTLF8524P2BNV	PF91XLJ	4.1	B1	0
4	cage1	0:0	FINISAR CORP.	FTLF8524P2BNV	PF723VV	4.1	A0	1
4	cage1	1:1	FINISAR CORP.	FTLF8524P2BNV	PF72AS4	4.1	B1	1
s071	cage4	0:0	FINISAR CORP.	FTLF8519P2BNL	PEN5K88	2.1	A0	4
s071	cage4	1:1	FINISAR CORP.	FTLF8519P2BNL	PES1B0Y	2.1	B1	4
s071	cage5	0:0	FINISAR CORP.	FTLF8519P2BNL	PEN28T2	2.1	A0	5
s071	cage5	1:1	FINISAR CORP.	FTLF8519P2BNL	PES06BV	2.1	B1	5
s071	cage6	0:0	SIGMA-LINKS	SL5114A-2102	B0Y0400079	2.1	A0	6
s071	cage6	1:0	SIGMA-LINKS	SL5114A-2102	B0Y0400051	2.1	A1	6

Note: In the screen output above, the **SFPs** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **SFPs** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **SFPs** tab does not display the **System** column.

The **Cage Subsystems SFPs** tab displays the following information:

Column	**Description**
System	The InServ Storage Server name.
Cage Name	The drive cage in which the SFP resides.
Name	The SFP name in node:slot format.
Manufacturer	The manufacturer of the SFP.
Model/Part Number	The model and/or part number of the SFP.
Serial Number	The SFP serial number.
Max Rate	The SFP's maximum speed, in Gbps.

Port Name	The name of the port on which the SFP resides.
Cage Position	The position (**0** or **1**) of the drive cage in the drive chassis.

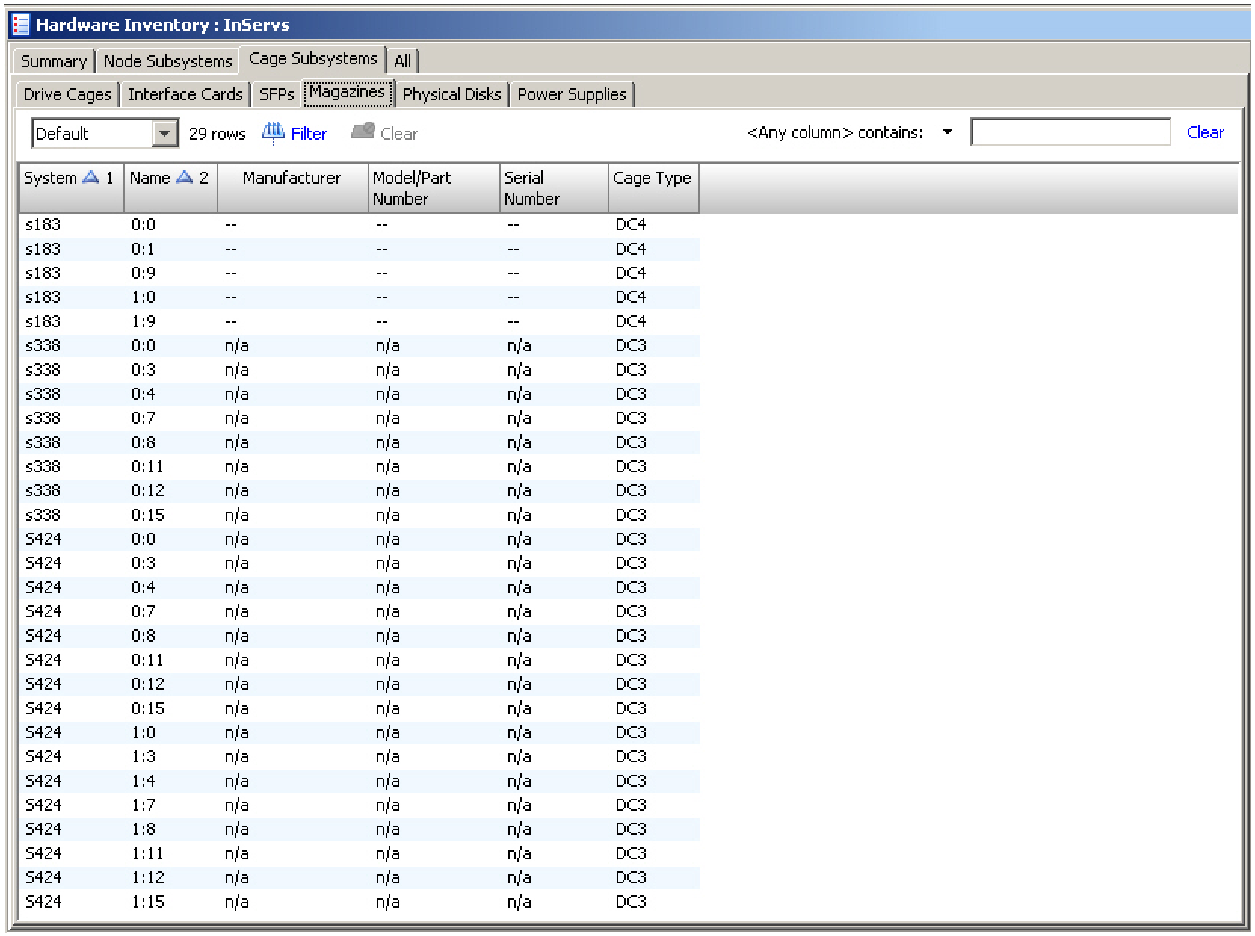
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Cage Subsystems Tab

Viewing the Cage Subsystems Magazines Tab

The **Cage Subsystems Magazines** tab displays information about the system's drive magazines.

➡To access the **Cage Subsystems Magazines** tab, click the **Magazines** tab after accessing the **Cage Subsystem** tab.


Hardware Inventory : InServs
Summary
Node Subsystems
Cage Subsystems
All
Drive Cages
Interface Cards
SFPs
Magazines
Physical Disks
Power Supplies
Default
29 rows
Filter
Clear
<Any column> contains:
Clear

System △ 1	Name △ 2	Manufacturer	Model/Part Number	Serial Number	Cage Type
s183	0:0	--	--	--	DC4
s183	0:1	--	--	--	DC4
s183	0:9	--	--	--	DC4
s183	1:0	--	--	--	DC4
s183	1:9	--	--	--	DC4
s338	0:0	n/a	n/a	n/a	DC3
s338	0:3	n/a	n/a	n/a	DC3
s338	0:4	n/a	n/a	n/a	DC3
s338	0:7	n/a	n/a	n/a	DC3
s338	0:8	n/a	n/a	n/a	DC3
s338	0:11	n/a	n/a	n/a	DC3
s338	0:12	n/a	n/a	n/a	DC3
s338	0:15	n/a	n/a	n/a	DC3
S424	0:0	n/a	n/a	n/a	DC3
S424	0:3	n/a	n/a	n/a	DC3
S424	0:4	n/a	n/a	n/a	DC3
S424	0:7	n/a	n/a	n/a	DC3
S424	0:8	n/a	n/a	n/a	DC3
S424	0:11	n/a	n/a	n/a	DC3
S424	0:12	n/a	n/a	n/a	DC3
S424	0:15	n/a	n/a	n/a	DC3
S424	1:0	n/a	n/a	n/a	DC3
S424	1:3	n/a	n/a	n/a	DC3
S424	1:4	n/a	n/a	n/a	DC3
S424	1:7	n/a	n/a	n/a	DC3
S424	1:8	n/a	n/a	n/a	DC3
S424	1:11	n/a	n/a	n/a	DC3
S424	1:12	n/a	n/a	n/a	DC3
S424	1:15	n/a	n/a	n/a	DC3

Note: In the screen output above, the **Magazines** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **Magazines** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **Magazines** tab does not display the **System** column.

The **Cage Subsystems Magazines** tab displays the following information:

Column	Description
System	The InServ Storage Server name.
Name	The drive magazine name, in node:slot format.
Manufacturer	The manufacturer of the drive magazine.
Model/Part Number	The model and/or part number of the drive magazine.

Serial Number	The serial number of the drive magazine.
Cage Type	The drive cage type (**DC2**, **DC3**, or **DC4**) in which the drive magazine resides.

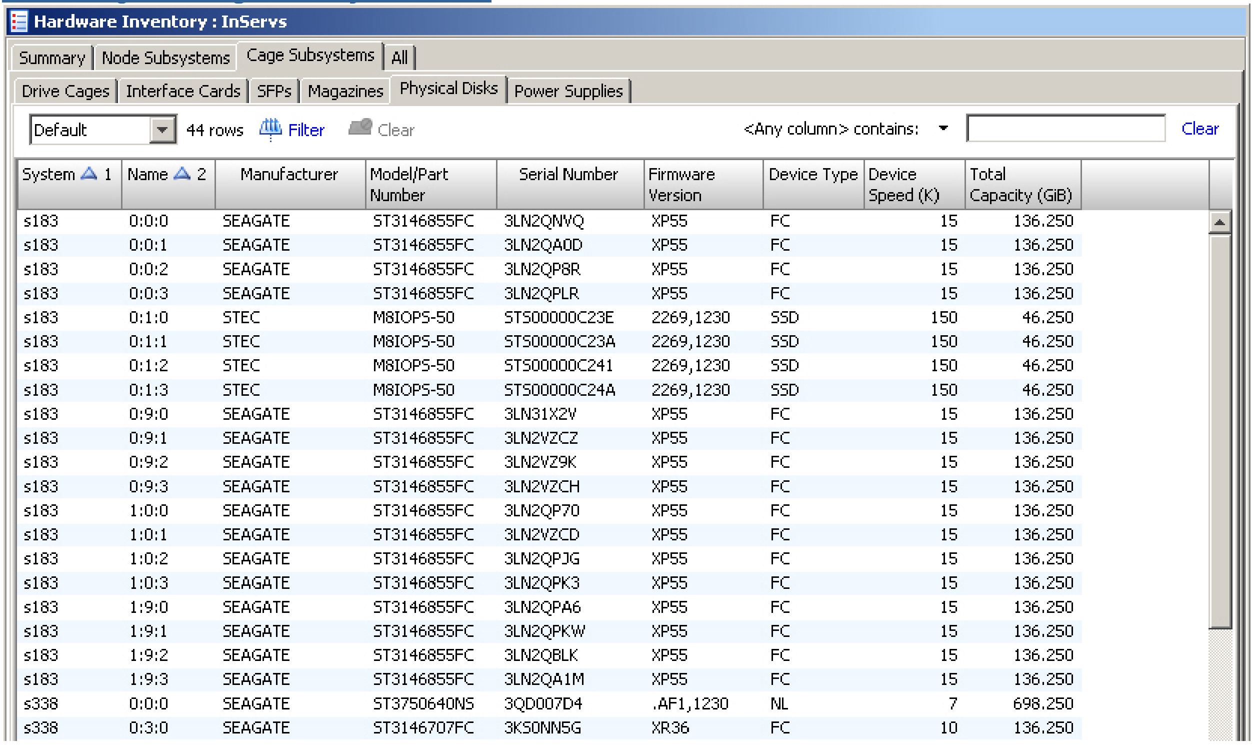
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Cage Subsystems Tab

Viewing the Cage Subsystems Physical Disks Tab

The **Cage Subsystems Physical Disks** tab displays information about the system's physical disk drives.

➡To access the **Cage Subsystems Physical Disks** tab, click the **Physical Disks** tab after accessing the **Cage Subsystem** tab.



System 1	Name 2	Manufacturer	Model/Part Number	Serial Number	Firmware Version	Device Type	Device Speed (K)	Total Capacity (GiB)
s183	0:0:0	SEAGATE	ST3146855FC	3LN2QNVQ	XP55	FC	15	136.250
s183	0:0:1	SEAGATE	ST3146855FC	3LN2QA0D	XP55	FC	15	136.250
s183	0:0:2	SEAGATE	ST3146855FC	3LN2QP8R	XP55	FC	15	136.250
s183	0:0:3	SEAGATE	ST3146855FC	3LN2QPLR	XP55	FC	15	136.250
s183	0:1:0	STEC	M8IOPS-50	STS00000C23E	2269,1230	SSD	150	46.250
s183	0:1:1	STEC	M8IOPS-50	STS00000C23A	2269,1230	SSD	150	46.250
s183	0:1:2	STEC	M8IOPS-50	STS00000C241	2269,1230	SSD	150	46.250
s183	0:1:3	STEC	M8IOPS-50	STS00000C24A	2269,1230	SSD	150	46.250
s183	0:9:0	SEAGATE	ST3146855FC	3LN31X2V	XP55	FC	15	136.250
s183	0:9:1	SEAGATE	ST3146855FC	3LN2VZCZ	XP55	FC	15	136.250
s183	0:9:2	SEAGATE	ST3146855FC	3LN2VZ9K	XP55	FC	15	136.250
s183	0:9:3	SEAGATE	ST3146855FC	3LN2VZCH	XP55	FC	15	136.250
s183	1:0:0	SEAGATE	ST3146855FC	3LN2QP70	XP55	FC	15	136.250
s183	1:0:1	SEAGATE	ST3146855FC	3LN2VZCD	XP55	FC	15	136.250
s183	1:0:2	SEAGATE	ST3146855FC	3LN2QPJG	XP55	FC	15	136.250
s183	1:0:3	SEAGATE	ST3146855FC	3LN2QPK3	XP55	FC	15	136.250
s183	1:9:0	SEAGATE	ST3146855FC	3LN2QPA6	XP55	FC	15	136.250
s183	1:9:1	SEAGATE	ST3146855FC	3LN2QPKW	XP55	FC	15	136.250
s183	1:9:2	SEAGATE	ST3146855FC	3LN2QBLK	XP55	FC	15	136.250
s183	1:9:3	SEAGATE	ST3146855FC	3LN2QA1M	XP55	FC	15	136.250
s338	0:0:0	SEAGATE	ST3750640NS	3QD007D4	.AF1,1230	NL	7	698.250
s338	0:3:0	SEAGATE	ST3146707FC	3KS0NN5G	XR36	FC	10	136.250

Note: In the screen output above, the **Physical Disks** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **Physical Disks** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **Physical Disks** tab does not display the **System** column.

The **Cage Subsystems Physical Disks** tab displays the following information:

Column	Description
System	The InServ Storage Server name.
Name	The disk name in node:slot:port format.
Manufacturer	The manufacturer of the disk.
Model/Part Number	The model and/or part number of the disk.
Serial Number	The disk's serial number.
Firmware Version	The disk's firmware version.
Device Type	The type of physical disk; Fibre Channel (**FC**), Solid State (**SSD**), or Nearline (**NL**).
Device Speed	The speed of the disk, in K.
Note: The **Device Speed** number does not represent a rotational speed for the drives without spinning media (SSD). It is meant as a rough estimation of the performance difference between the drive and the other drives in the system. For FC and NL drives, the number corresponds to both a performance measure and actual rotational speed. For an SSD drive, the number is to be treated as relative performance benchmark that takes into account in I/O per second, bandwidth, and the access time.	
Total Capacity	The total capacity of the disk, in GiB.

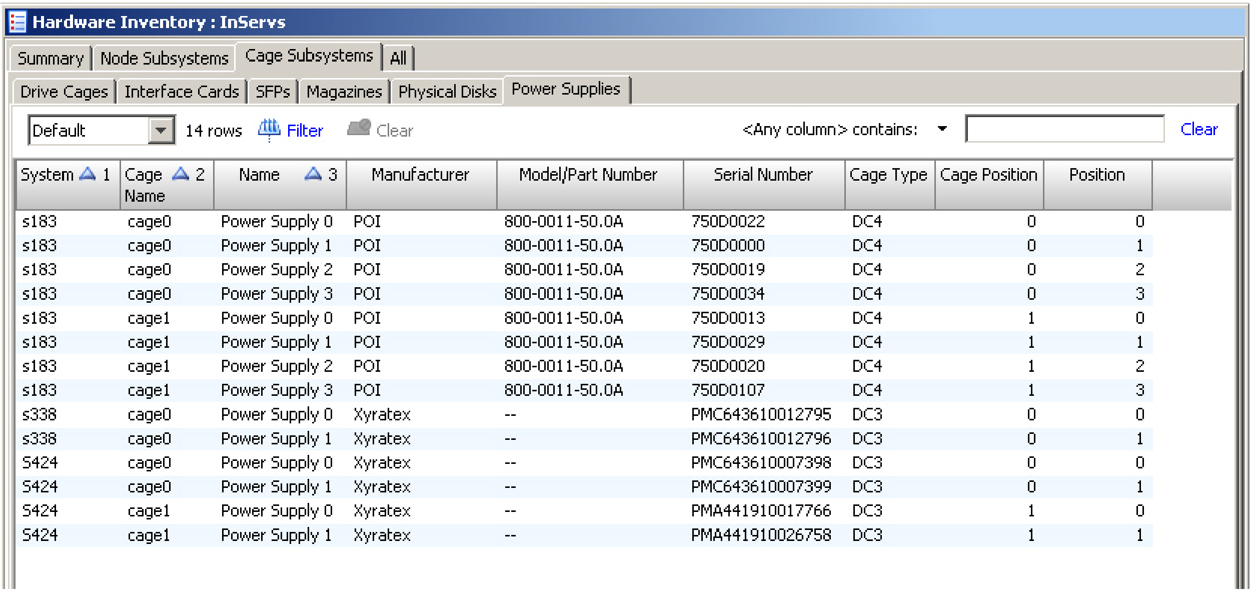
See also:

- Manager Pane
- Management Tree
- Management Window
- Viewing the Cage Subsystems Tab

Viewing the Cage Subsystems Power Supplies Tab

The **Cage Subsystems Power Supplies** tab displays information about the system's physical disk drives.

To access the **Cage Subsystems Power Supplies** tab, click the **Power Supplies** tab after accessing the **Cage Subsystem** tab.



System 1	Cage Name 2	Name 3	Manufacturer	Model/Part Number	Serial Number	Cage Type	Cage Position	Position
s183	cage0	Power Supply 0	POI	800-0011-50.0A	750D0022	DC4	0	0
s183	cage0	Power Supply 1	POI	800-0011-50.0A	750D0000	DC4	0	1
s183	cage0	Power Supply 2	POI	800-0011-50.0A	750D0019	DC4	0	2
s183	cage0	Power Supply 3	POI	800-0011-50.0A	750D0034	DC4	0	3
s183	cage1	Power Supply 0	POI	800-0011-50.0A	750D0013	DC4	1	0
s183	cage1	Power Supply 1	POI	800-0011-50.0A	750D0029	DC4	1	1
s183	cage1	Power Supply 2	POI	800-0011-50.0A	750D0020	DC4	1	2
s183	cage1	Power Supply 3	POI	800-0011-50.0A	750D0107	DC4	1	3
s338	cage0	Power Supply 0	Xyratex	--	PMC643610012795	DC3	0	0
s338	cage0	Power Supply 1	Xyratex	--	PMC643610012796	DC3	0	1
S424	cage0	Power Supply 0	Xyratex	--	PMC643610007398	DC3	0	0
S424	cage0	Power Supply 1	Xyratex	--	PMC643610007399	DC3	0	1
S424	cage1	Power Supply 0	Xyratex	--	PMA441910017766	DC3	1	0
S424	cage1	Power Supply 1	Xyratex	--	PMA441910026758	DC3	1	1

Note: In the screen output above, the **Power Supplies** tab has been accessed from the **InServs** node (all connected storage server) level on the Management Tree. If the **Power Supplies** tab was accessed from the Management Tree via a specific server node (for example, **s424**), the resulting information displayed on the **Power Supplies** tab does not display the **System** column.

The **Cage Subsystems Power Supplies** tab displays the following information:

Column	**Description**
System	The InServ Storage Server name.
Cage Name	The drive cage name.
Name	The power supply name.
Manufacturer	The manufacturer of the power supply.
Model/Part Number	The model and/or part number of the power supply.

Serial Number	The power supply's serial number.
Cage Type	The type of drive cage (**DC2**, **DC3**, or **DC4**).
Cage Position	The position of the drive cage in the drive chassis (**0** or **1**).
Position	The position of the power supply (**0**, **1**, **2**, or **3**).

See also:

Manager Pane

Management Tree

Management Window

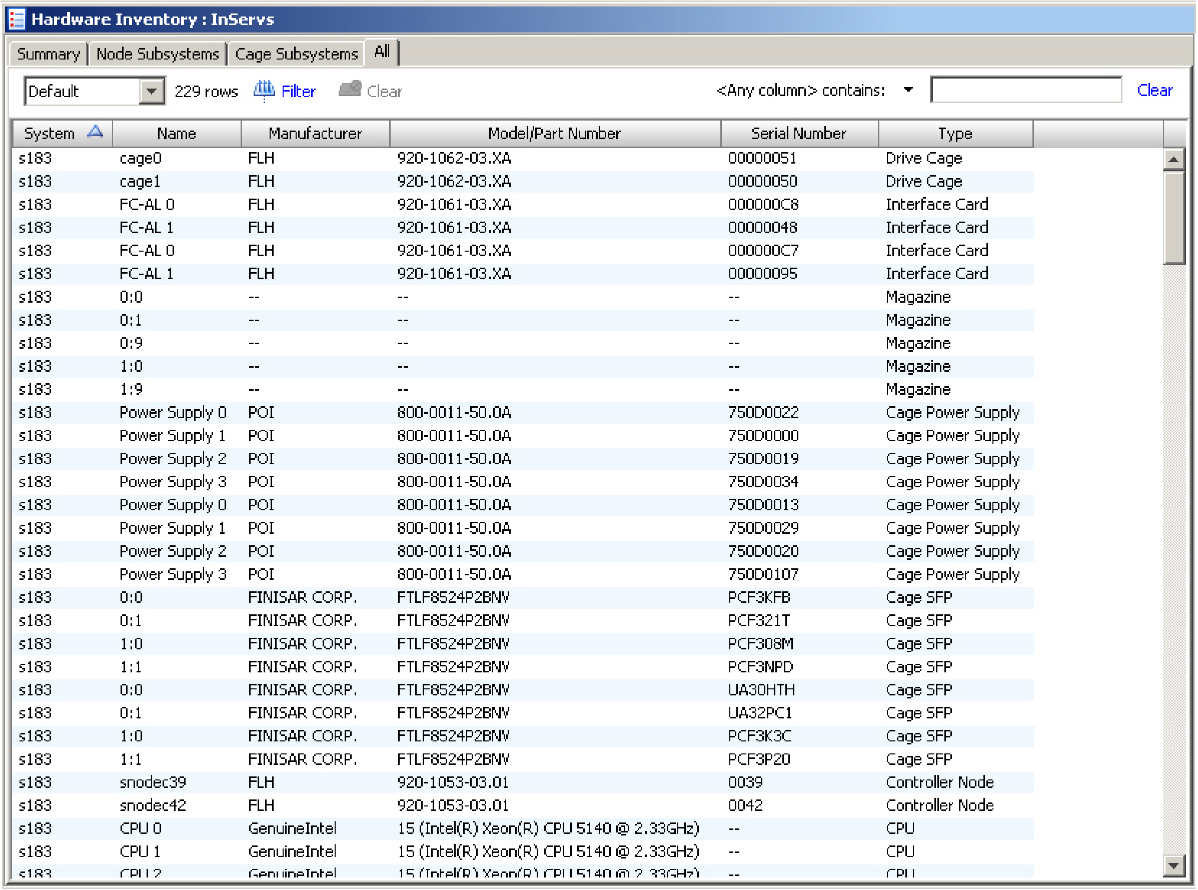
Viewing the Cage Subsystems Tab

Viewing the All Tab

The **Hardware Inventory All** tab provides an overview of all hardware components used in all connected InServ Storage Servers.

To access the **Hardware Inventory All** tab:

1. Click **Hardware Inventory** in the Manager Pane.
2. In the Management Tree, select the **InServs** node.
3. In the Management Window, click the **All** tab.



System	Name	Manufacturer	Model/Part Number	Serial Number	Type
s183	cage0	FLH	920-1062-03.XA	00000051	Drive Cage
s183	cage1	FLH	920-1062-03.XA	00000050	Drive Cage
s183	FC-AL 0	FLH	920-1061-03.XA	000000C8	Interface Card
s183	FC-AL 1	FLH	920-1061-03.XA	00000048	Interface Card
s183	FC-AL 0	FLH	920-1061-03.XA	000000C7	Interface Card
s183	FC-AL 1	FLH	920-1061-03.XA	00000095	Interface Card
s183	0:0	--	--	--	Magazine
s183	0:1	--	--	--	Magazine
s183	0:9	--	--	--	Magazine
s183	1:0	--	--	--	Magazine
s183	1:9	--	--	--	Magazine
s183	Power Supply 0	POI	800-0011-50.0A	750D0022	Cage Power Supply
s183	Power Supply 1	POI	800-0011-50.0A	750D0000	Cage Power Supply
s183	Power Supply 2	POI	800-0011-50.0A	750D0019	Cage Power Supply
s183	Power Supply 3	POI	800-0011-50.0A	750D0034	Cage Power Supply
s183	Power Supply 0	POI	800-0011-50.0A	750D0013	Cage Power Supply
s183	Power Supply 1	POI	800-0011-50.0A	750D0029	Cage Power Supply
s183	Power Supply 2	POI	800-0011-50.0A	750D0020	Cage Power Supply
s183	Power Supply 3	POI	800-0011-50.0A	750D0107	Cage Power Supply
s183	0:0	FINISAR CORP.	FTLF8524P2BNV	PCF3KFB	Cage SFP
s183	0:1	FINISAR CORP.	FTLF8524P2BNV	PCF321T	Cage SFP
s183	1:0	FINISAR CORP.	FTLF8524P2BNV	PCF308M	Cage SFP
s183	1:1	FINISAR CORP.	FTLF8524P2BNV	PCF3NPD	Cage SFP
s183	0:0	FINISAR CORP.	FTLF8524P2BNV	UA30HTH	Cage SFP
s183	0:1	FINISAR CORP.	FTLF8524P2BNV	UA32PC1	Cage SFP
s183	1:0	FINISAR CORP.	FTLF8524P2BNV	PCF3K3C	Cage SFP
s183	1:1	FINISAR CORP.	FTLF8524P2BNV	PCF3P20	Cage SFP
s183	snodec39	FLH	920-1053-03.01	0039	Controller Node
s183	snodec42	FLH	920-1053-03.01	0042	Controller Node
s183	CPU 0	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	CPU
s183	CPU 1	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	CPU
s183	CPU 2	GenuineIntel	15 (Intel(R) Xeon(R) CPU 5140 @ 2.33GHz)	--	CPU

The **Hardware Inventory All** tab provides the following information:

Column	Description
System Name	The system name.
Name	The name of the hardware component.
Manufacturer	The manufacture of the hardware component.
Model/Part Number	The model and/or part number of the hardware component.
Serial Number	The serial number of the hardware component.
Type	The type of hardware component.

See also:

Manager Pane

Management Tree

Management Window

Glossary

3

3PAR Domains: A 3PAR feature that is used to create distinct domains with domain-specific users and objects in an InServ Storage Server.

3PAR Remote Copy: A 3PAR product that allows you to copy virtual volumes from one InServ Storage Server to another. The copy can be used for disaster recovery, backup, or data migration.

3PAR Thin Provisioning: A 3PAR product that allows the user to allocate only the physical resources that are actually needed while presenting an arbitrarily large volume that can have its physical resources allocated on demand.

A

active VLUN: The connection of a virtual volume and a LUN for a particular host on a particular port. An active VLUN is created when a VLUN template is applied to the current system state. See also VLUN template.

admin space: See snapshot administration space.

admin volume: The base volume that is used by the system to store administration data such as the system event log. The admin volume is created as part of the storage server installation and setup process.

administration space: See snapshot administration space.

alert: A system event requiring immediate operator activity.

alert pane: The alert pane, located at the bottom of the InForm Management Console main window, displays information about system alerts.

allocation limit: User-defined threshold that can be set for thinly provisioned virtual volumes (TPVVs) to cap their potential size. See also allocation warning.

allocation warning: User-defined threshold that can be set for thinly provisioned virtual volumes (TPVVs) to alert users when they reach a certain size. See also allocation limit.

availability: Level of fault tolerance for a logical disk. For example, Magazine level availability means that the logical disk can tolerate a drive magazine failure. Cage availability level means that the logical disk can tolerate a drive cage failure.

B

backup server: In a Remote Copy setup, the storage server on which the copied volume groups reside.

base volume: Virtual volume type that forms the root of all virtual and physical snapshot functionality. Base volumes are the only type of volume that have snapshot data space and snapshot administration space used by snapshots to track changes to the base volume. See also thinly provisioned virtual volumes (TPVVs).

C

cache memory page (CMP): A 16-KIB block of control cache memory where I/O requests are stored.

Cage availability: Creates a virtual volume that can tolerate a drive cage failure because its RAID sets use chunklets from different drive cages.

child volume: A virtual volume (virtual or physical copy) made from a parent volume.

chunklet: A 256MB block of contiguous space on a physical disk.

clean chunklet: A chunklet to which no data has been written.

cluster: A group of controller nodes connected via the same storage server backplane. The nodes in a cluster operate as a unified system, separate from any other clusters that may share the same service processor.

CMP: See cache memory page.

common provisioning group (CPG): A set of logical disks from which you can create virtual volumes and virtual copies that are capable of allocating storage on demand.

control cache: Memory modules that support the microprocessors located in a controller node.

controller node: An individual device that works together with other controller nodes to cache and manage data in a storage server and to provide hosts with a coherent, virtualized view of the storage.

copy data: Data that occupies the snapshot data space on a virtual volume. See also snapshot data space.

Copy of RCIP: Remote Copy over IP. The use of 3PAR Remote Copy with two storage servers that are connected via Ethernet ports. See also 3PAR Remote Copy.

copy size: The size of the snapshot data space in a virtual volume, which is the amount of logical disk space reserved for snapshots. See also snapshot data space.

CPG template: Common provisioning group template. The template contains a set of common provisioning group and logical disk parameters that can be applied again and again to create common provisioning groups with the same characteristics using the InForm Management Console.

D

data cache: The dual in-line memory modules (DIMMs) that support the 3PAR ASIC located in a controller node.

data space: See snapshot data space.

DC2 drive cage: A storage server component consisting of a drive cage midplane, two drive cage FCAL modules, four power supplies, and up to 40 physical disks in a maximum of ten drive magazines.

DC3 drive cage: A storage server component consisting of a drive cage, two drive cage FCAL modules, two power supplies, and up to 16 physical disks.

DC4 drive cage: A storage server component consisting of a drive cage midplane, two drive cage FCAL modules, four power supplies, and up to 40 physical disks in a maximum of ten drive magazines.

destination volume: The virtual volume to which data is copied during a physical copy operation.

drive cage: See DC2, DC3, and DC4 drive cage.

drive cage FCAL: An interface module, located in a drive chassis, connecting a drive cage to a controller node or to another drive cage.

E

enclosure services interface: Interface on the DC2 and DC4 drive cages through which the node software communicates to the cage enclosure services controller to obtain status and control the cage behaviors.

ESI: See enclosure services interface.

event: Logs created by the system which allow you to view the day-to-day health of your system.

export: To make a virtual volume available to a particular instance of a host (that is, a host WWN that is actually present on a port) by creating an association between the name of the virtual volume and a LUN for that host on that port. See also LUN, VLUN, and VLUN template.

F

FCAL: Fibre Channel-Arbitrated Loop. FCAL is a fast serial bus interface standard used to connect storage devices to servers.

Fibre Channel adapter: A Fibre Channel PCI host bus adapter (HBA) located in a controller node. The Fibre Channel adapter connects a controller node to a host or to a drive chassis.

filtering: In the InForm Management Console, filtering a table temporarily removes table entries that do not meet the specified criteria.

G

grow: To expand a base volume manually by increasing the user space, snapshot administration space, or snapshot data space.

growth increment: The unit of storage by which additional logical disks are created and allocated to a common provisioning group (CPG). The growth increment is used to automatically create and allocate space on demand as additional resources are required by the volumes that draw from the logical disk pool. The default growth increment is fixed at 32 GB, but the minimum growth increment varies according to the number of controller nodes in the system (from 8 GB for a two-node system to 32 GB for a four-node system).

growth limit: User-defined threshold that can be set for common provisioning groups (CPGs) to cap their potential size. See also growth warning.

growth warning: User-defined threshold that can be set for common provisioning groups (CPGs) to alert users when they reach a certain size. See also growth limit.

H

host: A set of WWNs of the physical ports on a server.

host port: See target port.

I

initiator, initiator port: A port that is connected to a drive cage. Also known as a disk port because it sends commands to the physical disks.

Internet Storage Name Service: See iSNS

iSCSI adaptor: An iSCSI PCI host bus adapter (HBA) located in a controller node. The iSCSI adapter connects a controller node to a host.

iSCSI name: A value used to identify iSCSI channel devices on an arbitrated loop.

iSNS: Internet Storage Name Service. Protocol that allows automated discovery, management, and configuration of iSCSI.

L

LD template: Logical disk template. The template contains a set of logical disk parameters that can be applied again and again to create logical disks or volumes with the same characteristics using the InForm Management Console.

logical unit number: See LUN.

LUN: Stands for logical unit number. A number used to access a virtual volume that has been assigned to a particular host on a particular port. See also export, VLUN, and VLUN template.

M

Magazine availability: Creates a virtual volume that can tolerate a drive magazine failure because its RAID sets use chunklets from different drive magazines.

matched-set VLUN template: A rule that allows a particular host connected to a particular port to see a virtual volume as a specified LUN. See also VLUN template.

Maximum Transmission Unit: See MTU.

mirror: One member of a group of mirrored chunklets, which is also known as a RAID 1 set.

mirror depth: See set size.

mirroring: A data redundancy technique used by some RAID levels and in particular RAID 1 to provide data protection on a storage array.

MTU: Maximum Transmission Unit. The greatest amount of data or "packet" size that can be transferred in one physical frame on a network.

N

No One Host policy: Use when exporting a VV to multiple hosts for use by a cluster-aware application, or if using port presents VLUNs.

No Stale Snapshot: System can halt writing data to the base volume so as to prevent loss of sync between the base volume and its snapshots.

no stale snapshots: Virtual copy policy that prevents changes being written to a base volume when it does not have enough snapshot data or administration space to prevent virtual copies from becoming invalid, or stale, as a result. See also stale snapshots, virtual copy policy.

O

One Host policy: Constrains the export of a volume to one host or one host cluster (when cluster names may be used as a host name.) This protects the volume from accidental export to multiple hosts which could lead to data corruption if both hosts are writing to the volume.

original parent base volume: The original base volume from which a series of virtual and/or physical copies has been created. Any volume can be the parent from which one or more virtual copies is created, but for each set of related copies there is only one original parent base volume.

P

parent volume: A virtual volume from which a virtual or physical copy is made. See also original parent base volume.

parity: A data redundancy technique used by some RAID levels and in particular RAID 5 to provide data protection on a storage array.

parity set: See RAID 5 set.

parity set position: The group of chunklets that occupy the same position within a RAID 5 logical disk parity set.

physical copy: A physical copy is a snapshot that duplicates all the data from one base volume to another base volume (the destination volume) for use, should the original become unavailable.

physical copy, promoting: Promoting a virtual copy copies the changes from a virtual copy back onto the base volume.

physical parent: The source volume for a physical copy.

Port availability: Creates a virtual volume that can tolerate two port failures because its RAID sets use chunklets from devices on different cage loops.

port-presents VLUN template: A VLUN template that allows any host connected to a particular port to see a virtual volume as a specified LUN. See also VLUN template.

primary server: In a Remote Copy setup, the storage server on which the primary volume groups originate.

primary volume group: In Remote Copy, the set of volumes on the storage server to be copied.

promote: For physical copies: to break the association between a physical copy and a base volume by changing the physical copy into an independent base volume. For virtual copies: to copy the changes from a virtual copy back onto the base volume, therefore overwriting the base volume with the virtual copy.

R

RAID 0 set: Striped rows of chunklets on two or more physical disks. A RAID 0 set offers no data redundancy.

RAID 10 (RAID 1) set: A group of mirrored chunklets.

RAID 50 (RAID 5) set: A group of parity-protected chunklets. Also known as a parity set.

RAID set: A grouping of mirrored or parity-protected chunklets.

RCFC: Remote Copy over Fibre Channel. The use of 3PAR Remote Copy with two storage servers that are connected via Fibre Channel ports. See also 3PAR Remote Copy.

RCIP: Remote Copy over IP. The use of 3PAR Remote Copy with two storage servers that are connected via Ethernet ports. See also 3PAR Remote Copy.

registered state change notification (RSCN): A Fibre Channel switch function that allows notification to registered nodes if a change occurs to other specified nodes.

Remote Copy links: The method by which information is sent and received between Remote Copy targets.

Remote Copy pair: The pair of storage servers on which Remote Copy operations are performed.

Remote Copy target: The description of a Remote Copy system on one server in the Remote Copy pair. Each server in a Remote Copy pair must have a target definition for the other server.

Remote Copy volume group: A group of virtual volumes that are logically related and for which there is a cross-volume ordering or writes.

resynch, resynchronize: To copy changes from one volume in a physical copy pair to the other because that volume was modified at some point after the physical copy operation took place. See also physical copy.

row: A grouping of RAID sets. Data is striped across the rows of RAID 10 and RAID 50 logical disks.

row size: The number of sets in a row. A row is a grouping of RAID sets. Data is striped across the rows of RAID 10 and RAID 50 logical disks.

RSCN: See registered state change notification.

S

SCSI reservation/registration: Allows multiple hosts to share a SCSI interface to access exported volumes. Multiple hosts can have registrations to a single volume, but only one host can have the reservation.

secondary volume group: In Remote Copy, the set of copied volumes on the storage server.

set: See set size.

set size: The number of chunklets in a set. Also known as mirror depth for RAID 1 sets and parity set for RAID 5 sets.

SFP: High-speed data transceiver, small in size and hot pluggable, allowing for an individual SFP connector to be replaced without replacing the entire module.

small form-factor pluggable optical transceiver: See SFP.

snapshot: A virtual or physical copy of a virtual volume.

snapshot administration space: The space on a virtual volume that is used to track changes to the data since a snapshot of a virtual volume was created.

snapshot data: Data written to the base volume's snapshot data space to record changes to the base volume after the first virtual copy of that volume was created.

snapshot data space: The space on a virtual volume that holds the data that has been changed since the first virtual copy was created.

solid state drive: A data storage device that uses solid-state memory to store persistent data.

source server: See primary server.

source volume: The virtual volume from which a copy is made.

spare, spare chunklet: A chunklet that is reserved for use in case of a failure in the system. A certain number of chunklets are reserved for use as spares during the system setup and installation process. However, the system may temporarily set aside additional spares even though these chunklets are not permanently designated for use as spares.

SSD: See solid state drive.

stale snapshot: A snapshot that does not track the most recent changes to its base volume. The No Stale Snapshots virtual copy policy halts writing data to the base volume so as to prevent loss of sync between the volume and any snapshots. See also virtual copy policy and no stale snapshots.

step size: The number of contiguous bytes that the system accesses before moving to the next chunklet.

system manager: Software component that negotiates between the storage server and the user interfaces such as the InForm Management Console and InForm CLI.

T

target mode: The firmware setting for a port that is connected to a host.

target, target port: The port that is connected to and receives commands from a host computer. Also known as a host port.

template: See VLUN template.

thin provisioning: See 3PAR Thin Provisioning.

thinly provisioned virtual volume (TPVV): A virtual volume that maps to logical disk space associated with a common provisioning group (CPG) and is therefore capable of growing on demand.

TPVV: See thinly provisioned virtual volume.

U

unspecified property: When using the InForm Management Console, a property that has been included in a template but does not have a defined value. When applying the template, the system will either use the default value (when applicable) or calculate the optimized setting for you.

user data: For standard base volumes, the data that is written to the user space.

user size: The amount of user space in a virtual volume, or the size of the volume as presented to the host.

user space: The space on a virtual volume that represents the size of the virtual volume as presented to the host. For standard base volumes, the user space holds all user data. For thinly provisioned virtual volumes, no storage is actually allocated to user space, so the user space represents the volume's virtual size. See also virtual size.

V

virtual copy: A snapshot, or copy-in-time, of another volume (a base volume or another virtual copy) created using copy-on-write techniques.

virtual copy consistency group: A group of snapshots created from multiple virtual volumes at the same time in order to ensure consistency.

virtual size: The size that the volume presents to the host. For standard base volumes, the virtual size is equal to the user space. For thinly provisioned virtual volumes, no storage is actually allocated to user space, so the virtual size is determined by whatever value is assigned to the user space. See also user space.

virtual volume: A virtual storage unit created by mapping data from one or more logical disks. See also logical disk, mapping.

VLUN: A pairing between a virtual volume and a Logical Unit Number (LUN), expressed as either a VLUN template or an active VLUN.

VLUN template: Sets up an association between a virtual volume and a LUN-host, LUN-port, or LUN-host-port combination by establishing the export rule, or the manner in which the volume is exported.

VV template: Virtual volume template. The template contains a set of virtual volume parameters that can be applied again and again to create volumes with the same characteristics using the InForm Management Console.

W

World-Wide Name (WWN): A unique 64-bit value used to identify Fibre channel devices on an arbitrated loop. The WWN consists of a prefix issued by the IEEE to uniquely identify the company and a suffix that is issued by the company.

WWN: See World-Wide Name.

Z

zone: A unit of physical disk space reserved by a controller node for snapshot or snapshot administration data. A single zone may occupy space on more than one disk.

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